

SITE: Carrier Air  
BREAK: 8.4  
OTHER: V1

**EAST WELL AQUIFER PUMPING TEST**

**REPORT**

**COLLIERVILLE MUNICIPAL WELL FIELD**

Prepared for:  
**CARRIER CORPORATION**  
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## **1.0 INTRODUCTION**

This report presents the results of an aquifer test performed by EnSafe, Inc., for Carrier Corporation at the Collierville Municipal Water Plant 2 in Collierville, Tennessee. Water Plant 2 is located in the northwest corner of the Carrier manufacturing facility on Byhalia Road in Collierville, TN (Figure 1).

This site has been identified on both the National Priorities List and the Tennessee State Superfund List due to soil and groundwater contamination with trichloroethylene (TCE). TCE was released as a result of leakage from a former surface impoundment (1972) and two industrial spills (1979 and 1985). Trace amounts of TCE are present in the Memphis Sands Aquifer near Water Plant 2.

The objective of the aquifer test was to characterize the Memphis Sands in the vicinity of the Collierville Plant to facilitate the design of a groundwater treatment system as specified in the EPA Record of Decision dated September 6, 1992.

The Water Plant 2 Aquifer Test began on September 11, 1992 and ended October 5, 1992. The aquifer test was comprised of four phases:

- (1) The Two-Well Aquifer Test, in which both the East and West Municipal Wells were pumped
- (2) The First Recovery Period, in which the Memphis Sands aquifer recovered from the Two-Well Aquifer Test and returned to ambient conditions
- (3) The East Well Aquifer Test, in which the East Municipal Well was pumped alone;
- (4) The Second Recovery Period, in which the Memphis Sands recovered from the East Well Test and returned to ambient conditions.

of the same magnitude as random fluctuations in ambient conditions. Second, barometric pressure data was not collected during the test; therefore, corrections could not be made for fluctuations in drawdown due to changes in barometric pressure. Third, Geraghty and Miller noted that a five-hour recovery period provided insufficient time to study the aquifer's return to ambient conditions.

In addition to their critique, Geraghty and Miller suggested several ways in which the aquifer test could be improved to provide more accurate data:

- (1) extend the duration of the aquifer test period
- (2) extend the duration of the recovery period
- (3) monitor ambient conditions and barometric pressure variations for future correlation of data
- (4) graph and evaluate data during the test to detect anomalies or equipment malfunctions; and,
- (5) increase the pumping rate to further stress the aquifer.

Finally, the Geraghty and Miller report re-estimated the aquifer characteristics using what was determined to be the most reliable data from the Dames and Moore test. The transmissivity of the Memphis Sands was estimated to be 31.9 ft<sup>2</sup>/day with a storage coefficient of 0.00065. These values are within the same order of magnitude as the Dames and Moore estimates.

### **3.0 ENSAFE AQUIFER TEST DESIGN**

EnSafe designed a new aquifer test at Water Plant 2 in response to the questions raised by the Geraghty and Miller critique. At the beginning of the test, it was unknown whether the new aquifer test would confirm or refine the previously estimated aquifer characteristics.

The aquifer test was divided into four phases: a Two-Well Aquifer Test, a First Recovery Period, an East Well Aquifer Test, and a Second Recovery period. The Two-Well Aquifer Test

was designed to stress the aquifer and determine the drawdown and radius of influence of the two wells under the site. To stress the aquifer as much as possible, both wells were to be pumped at maximum capacity (approximately 500 gpm each) for a total extraction rate of approximately 1000 gpm. This test was to be run for at least 72 hours or until equilibrium was established, to be followed immediately by the First Recovery Period during which the aquifer could return to ambient conditions. The anticipated amount of time needed for the Memphis Sands aquifer to achieve complete recovery was 72 hours.

When the aquifer recovered fully, the test was to begin and run for at least 72 hours at approximately 500 gpm. At the end of the East Well Test, the Second Recovery Period was to begin. Once again, recovery to ambient conditions was expected within 72 hours.

Throughout the four phases of the test, seven wells were to be monitored using Hermit automatic data loggers. All other observation wells were to be monitored by hand using electronic water level indicators. To augment the drawdown data near the east pumping well, two piezometers (APT1, APT2) were installed to form a line with the east well perpendicular to the direction of groundwater flow.

Finally, ambient conditions and barometric pressure variations were to be monitored onsite throughout the duration of the test. In order to ensure data validity and detect anomalies caused by equipment malfunction, drawdown data were to be graphed periodically throughout all four phases of the test.

#### **4.0 EQUIPMENT AND METHODOLOGY**

##### **4.1 Piezometer Installation and Design**

Both hollow-stem augering and mud rotary drilling techniques were used to install the two piezometers, APT1 and APT2. A pilot hole was first drilled using 3.25 inch - ID augers. During previous investigations, the top of the Jackson Clay was encountered at approximately 50 feet below ground surface (bgs). During installation, therefore, split-spoon soil samples were collected beginning at 40 feet bgs at 5-foot intervals to more accurately identify the top of the Jackson clay.

Each pilot hole was then over drilled using 12.25 inch - OD augers to a depth approximately 5 feet below the top of the Jackson Clay. The larger diameter hole allowed installation of a 6-inch diameter, schedule 40 PVC surface casing. The surface casing was installed to prevent potential cross contamination between the shallow unconfined aquifer and the Memphis Sands aquifer. A cement/bentonite grout mixture was tremied in the annulus around the casing to hold it in place and provide an adequate seal.

Several days after grouting, each borehole was advanced through the casing with a 5.25-inch mud rotary bit. A light sodium bentonite mud was used to provide hydrostatic pressure during drilling. Soil samples were collected at approximately 10-foot intervals to determine the contact between the Jackson Clay and the Memphis Sands. For lithologic purposes, sampling continued to the termination depth approximately 40 feet below the top of the Memphis Sands.

Piezometers consisting of 1.5-inch diameter, flush threaded, schedule 40 PVC risers and screens were installed in each borehole. APT1 has a 10-foot length of 0.010 inch slot screen set from 148 to 158 feet below ground surface and APT2 has a 20-foot length of screen set between 138 and 158 feet.

Natural aquifer materials were allowed to collapse around each piezometer screen to form the filter pack. The collapse was enhanced by pumping potable water through the piezometer and into the formation. To prevent leakage, a 10-foot thick bentonite slurry seal was placed at the bottom of the Jackson Clay between 115 and 105 feet below ground surface. After the bentonite was allowed to hydrate, a cement/bentonite grout mixture was pumped into the remaining annular space. Auger spoils, drilling mud, and flush water were collected and stored in 55-gallon drums and disposed of in accordance with applicable regulations.

For protection and security, a locking steel casing was placed over the piezometers and cemented in place. The top of each piezometer was surveyed to the nearest 0.01 foot using a local USGS benchmark.

#### **4.2 Monitoring Equipment**

The East Well of the Collierville Municipal Well Field served as the pumped well during the single well test. The East Well was selected because it is located closer to most of the selected observation wells. The location was also selected because the new piezometers could be properly oriented and remain on Carrier property.

In-situ Inc. pressure transducers were installed to measure fluctuations in groundwater levels within the East Well, the two new piezometers (APT1 and APT2), MW-6, MW-14, MW-58, and the West Well. APT1 and APT2 were selected to study the cross-gradient effect of the pumping test; the west well was selected to study the down gradient effects; and, MW-6, 14, and 58 were selected to study the upgradient effects. Transducers in MW-6 and MW-58 were monitored with double channel Hermit 1000s. The five other transducers were monitored with an eight channel Hermit 2000.

Clocks on all data loggers were synchronized before the start of the first test. Each Hermit was programmed to record water levels on logarithmic time intervals. A portable computer was used to download data from the Hermits and to plot data during the tests.

A barometric pressure transducer was also connected to the Hermit 2000 to monitor atmospheric changes. Barometric pressure readings were collected on logarithmic time intervals for the duration of the test.

During each test, water levels in selected wells were monitored intermittently with a hand held water level indicator. For the first eight hours of each test, water levels were collected at one to two hour intervals. The interval between measurements was increased to four hours after the initial eight hour period. Approximately 24 hours after a test was started, hand measurements were made every 8 to 12 hours for the remainder of the test.

#### **4.3 Decontamination Procedures**

Transducers and water level indicators were decontaminated before and after placement in the observation wells. Drilling equipment was steam cleaned and decontaminated before leaving the site. During the two well test, decontamination consisted of a deionized water rinse, an isopropyl alcohol rinse, and a deionized water rinse. At the request of the EPA, this decontamination procedure was changed for the single well test. During the single well test decontamination consisted of a deionized water rinse, a dilute Liquinox rinse, and a deionized water rinse.

Decontamination water from the drilling equipment was collected at the decontamination pad and properly disposed of.

## **5.0 AQUIFER TEST PROCEDURES**

### **5.1 Setup**

Three days prior to the Two-Well Aquifer Test, field equipment was set up at the Water Plant 2 and on the Carrier Corporation property. The two municipal wells were shut down 48 hours before the test to ensure full recovery in the aquifer from previous aquifer. As stated in the work plan, both the East and West wells, APT1, APT2, MW-14, MW-6, and MW-58 were monitored using pressure transducers and Hermit data loggers. A barometric pressure transducer was also connected to the Hermit data loggers to monitor barometric pressure fluctuations throughout the aquifer test. Table 2 lists the deep and shallow wells selected for hand monitoring during the setup period and into the Two-Well Test. Water levels in these wells were measured at least three times before the start of the Two-Well Test in order to assess ambient conditions.

**Table 2**  
**Hand Monitored Observation Wells**  
**(Two-Well Test)**

Deep Wells		Shallow Wells	
MW-1	MW-10	MW-1A	MW-9
MW-1B	MW-12	MW-3	MW-11
MW-4	MW-14	MW-5	MW-27

During setup procedures, both EnSafe and EPA personnel identified several additional locations to be monitored in the Two-Well Aquifer Test. MW-59 and MW-61 were selected for characterization of the unconfined portion of the aquifer beyond the Jackson Clay "pinch-out". Shallow wells MW-19, MW-37, MW-39, MW-41, and MW-59 were included for further characterization of the shallow water table atop the Jackson Clay. Water levels in Nonconnah Creek at the Byhalia Road bridge were monitored to qualitatively assess the hydraulic connection between the creek, the aquifer, and the pumping wells.

### **5.2 Two-Well Aquifer Test**

In the Two-Well Aquifer Test, both the East and the West Municipal Wells at the Water Plant 2 were operated at approximately 400 gpm, for a total stress on the aquifer of approximately 800 gpm. Originally slated to be run at 1000 gpm (both the East and West Wells pumping at 500 gpm), the pumps had to be throttled back to 800 gpm (total flow) to accommodate the capacity of the Water Plant 2 holding tank and discharge pumps. Under normal operating conditions, the holding tank discharge pumps have a capacity of 1,500 gpm. However, one of the two holding tank discharge pumps was inoperable during this test, and the holding tank discharge capacity was reduced to 750 gpm.

During the two well test, Hermit data loggers monitored the drawdown in both the East and West Wells, APT1, APT2, MW-14, MW-6, and MW-58, as well as the barometric pressure. Data were collected automatically on a logarithmic scale for the duration of the test. The time interval between data logger measurements ranged from 0.0033 to 60 minutes.

Depth to water measurements in hand monitored wells were taken once every two hours for the first eight hours of the test. During the next 16 hours, water level measurements were taken every four hours. After the initial twenty four hour period, however, the frequency of water level measurements were reduced to once every 8 to 12 hours.

After 53 hours, aquifer pumping rates exceeded the capacity of the holding tank and associated discharge pumps. Therefore, the two well test was terminated.

### **5.3 First Recovery Period**

For the First Recovery Period, both the East and West Municipal Wells were turned off at the same time. The seven wells monitored with the Hermit data loggers were once again monitored on a logarithmic scale beginning at the instant of shutdown. As with the Two-Well Test, the time interval between data logger drawdown measurements ranged from 0.0033 to 60 minutes.

To reduce manpower requirements for the First Recovery Period, however, any hand monitored wells which did not fluctuate more than 0.1 foot were removed from the sequence. Table 3 lists those wells which were hand monitored during the First Recovery Period are listed below. Although water levels in MW-3 and MW-13 did not change a great deal during the two well test, these two wells were monitored to characterize barometric pressure variations and rainfall percolation effects in the shallow water table.

Table 3 Hand Monitored Wells (First Recovery Period)			
Deep Wells		Shallow Wells	
MW-1	MW-12	MW-3	MW-61
MW-4	MW-61		
MW-10			

Water level measurements were made once every two hours during the first eight hours of the recovery period. During the following 16 hours, water level measurements were taken once every four hours. After the initial 24-hour period, depth to water measurements were made every 8 to 12 hours.

The First Recovery Period was terminated 24 hours after both the East and West Wells were shut down.

#### **5.4    East Well Aquifer Test**

During the East Well Aquifer Test, the East Municipal Well at Water Plant 2 was pumped at approximately 500 gpm. Logarithmic water level measurements began at the same time as the East Well Aquifer was activated, monitoring the same wells as in the Two-Well Test and the First Recovery Period.

Two additional wells were added to the sequence of hand monitored wells: MW-16 and MW-43. MW-16, although its behavior during the Two-Well Test appeared unconnected to the pumping test, was monitored as both EnSafe and EPA personnel stressed its importance with respect to the known contaminant plume. MW-43 was monitored to assess the behavior of the shallow aquifer near the pumping well.

Water level measurements in hand monitored wells were taken once every two hours for the first eight hours of the test. For the next 16 hours, measurements were made once every four hours. After 24 hours, measurements were made once every 8 to 12 hours.

The East Well Aquifer Test was terminated 115.5 hours after the start of aquifer test.

### **5.5 Second Recovery Period**

The Second Recovery Period began at the instant the East Well pump was shut down to terminate the East Well Aquifer Test. Hermit data loggers recorded water level measurements in both the East and the West Well, APT1, APT2, MW-14, MW-6, and MW-58 on a logarithmic scale beginning at the same time the pump was shut down.

The same wells which were hand monitored during the East Well Test were measured during the Second Recovery Period. The hand monitoring timetable was the same as that followed during the East Well Test: once every two hours for the first eight hours; once every four hours for the next 16 hours; once every 8 to 12 hours after the initial 24 hours of data collection were complete.

The Second Recovery Period was terminated 168 hours after the East Well was shut down.

## **6.0 DATA PREPARATION**

All data collected during the aquifer tests was directly input or imported into Quattro Pro for format manipulation and graphic analysis. Data set formats were manipulated to facilitate import into Geraghty and Miller's AQTESOLV aquifer characteristics program. Data sets were also graphed within Quattro to check for any obvious data gaps or other anomalies. These graphs were also used to qualitatively assess which observation well locations had been influenced during the pumping and recovery tests.

## **7.0 EFFECTS OF AQUIFER BEHAVIOR ON DRAWDOWN DATA**

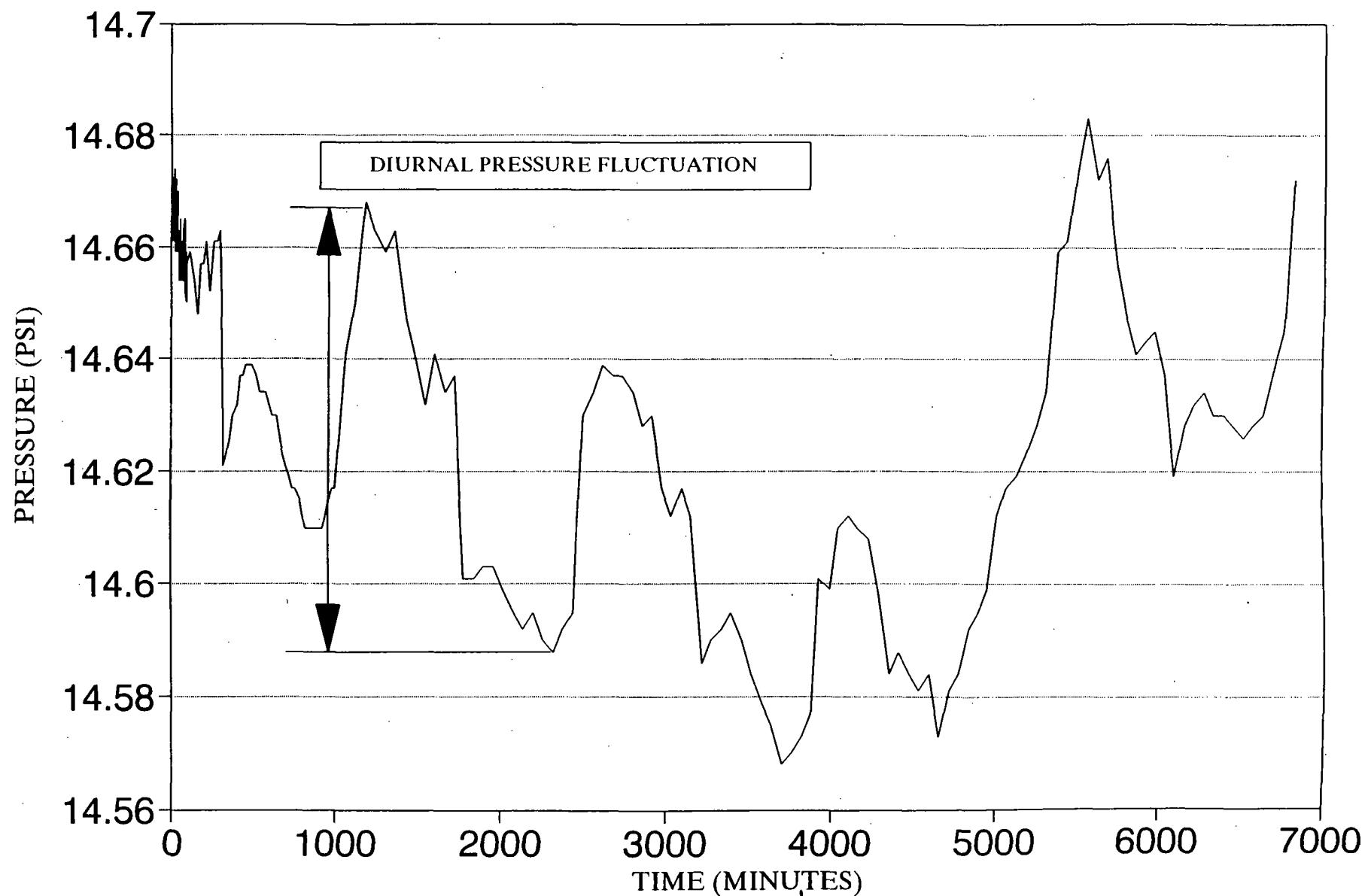
Only slight effects aquifer behavior were seen in the shallow monitoring wells. The small, fluctuating changes in drawdown seen in the shallow wells were attributed to barometric pressure fluctuations and rainfall percolation.

The effects of aquifer behavior varied among deep monitoring wells. All wells displayed some response to barometric pressure fluctuations, visible mostly in the early and later portions of the time-drawdown curve. Negligible drawdown was observed in many wells during early pumping periods. For wells near the pumping well, this delay was attributed mainly to well storage. For wells further ( $> 1000$  ft) from the pumping well, this delay was assessed mainly as a function of distance from the pumping well. Data during these early periods was therefore analyzed for qualitative purposes only. The proximity of the site to the recharge boundary also had a significant impact on the drawdown in the deep wells near the Jackson Clay pinch-out. Further explanation of aquifer behavior is presented below.

### **7.1 Barometric Pressure Fluctuations**

In addition to monitoring water levels in the different observation and pumping wells, the Hermit data loggers recorded the readings of a barometric pressure probe onsite. The barometric pressure data were graphed (Figure 2) periodically during the test to evaluate its effects on

FIGURE 2  
BAROMETRIC DATA FOR EAST WELL TEST



different monitoring wells. While it was difficult to assess whether barometric pressure had a full or partial effect on water levels, there was a distinct diurnal fluctuation in both time-drawdown and barometric pressure data. In some cases, the barometric influence appeared to be delayed, while in others it appeared to be immediate. A barometric correction was performed on approximately half the deep well data as described in Dawson and Istok (1991) using a 70 percent efficiency factor.

## 7.2 Well Storage

The large volume of water stored in the pumping wells at this site can cause misleading drawdown data during early periods of aquifer tests. Immediately after initiating pumping, well yield comes only from the water stored in the well. As pumping continues, well yield comes increasingly from the surrounding aquifer. A duration of one to two minutes of well storage interference was estimated for this early pumping period using the following equation (Schafer, 1978).

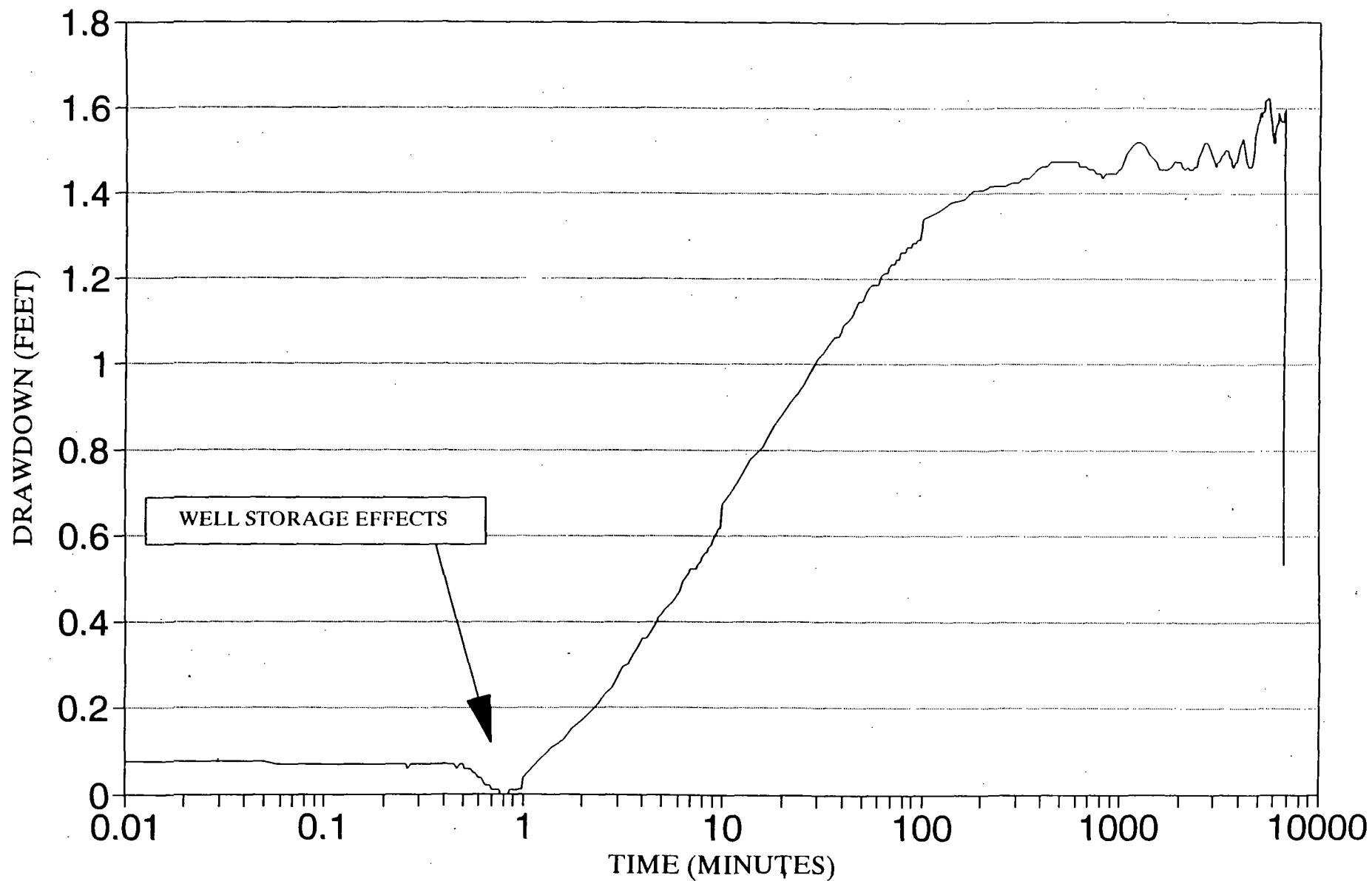
$$t_c = \frac{0.6 * (d_c^2 - d_p^2)}{(Q/s)}$$

Where:

- $t_c$  = time, in minutes, where well storage becomes negligible  
 $d_c$  = inside diameter of well casing in inches (12)  
 $d_p$  = outside diameter of pump column in inches (8)  
 $Q/s$  = specific capacity of well in gpm/ft of drawdown at time  $t_c$

The effects of well storage were primarily seen in APT1, APT2, and the pumping wells. Figure 3 shows the effects of well storage on APT1 during the East Well Test. Although data from the two piezometers were used to estimate aquifer characteristics, early data from these wells would distort the transmissivities estimated.

FIGURE 3  
APT1 DURING EAST WELL TEST



### **7.3 Distance from the Pumping Well**

Up to 10 minutes after initiating pumping, negligible changes in drawdown were observed in observation wells stationed at great distances ( $> 1000$  ft) from the pumping well. Because of this delayed response, the use of the early data for estimation of aquifer values would yield artificially high transmissivity values.

This delay is a result of the three-phased way in which an aquifer responds to pumping. During the period immediately subsequent to pumping, flow in the aquifer is essentially vertical and drawdown is not induced outside the area immediately adjacent to the well. As pumping continues, flow becomes less vertical, the cone of depression begins to expand, and drawdown is seen further from the well. Later, flow becomes essentially horizontal, the zone of depression expands until reaching either a recharge or impervious boundary, and drawdown can be seen in observation wells far from the well.

In most of the distant wells, there was an extended delay before drawdown effects became clear. In MW-14, this delay was only two to three minutes. In MW-6, however, approximately 9 to 10 minutes of delay are visible, as is seen in Figure 4. Once the zone of depression reaches these outer monitoring wells the drawdown curve behaves as expected.

### **7.4 Effects of the Recharge Boundary**

Time-drawdown analysis of wells near recharge boundaries can yield artificially high transmissivity values (Driscoll, 1986). Graphical analysis of drawdown data for wells near the Jackson Clay pinch-out showed that drawdown stabilized after approximately 500 to 1000 minutes. This stabilization is typical of an area under the influence of a recharge boundary.

FIGURE 4  
MW-6 DURING EAST WELL TEST

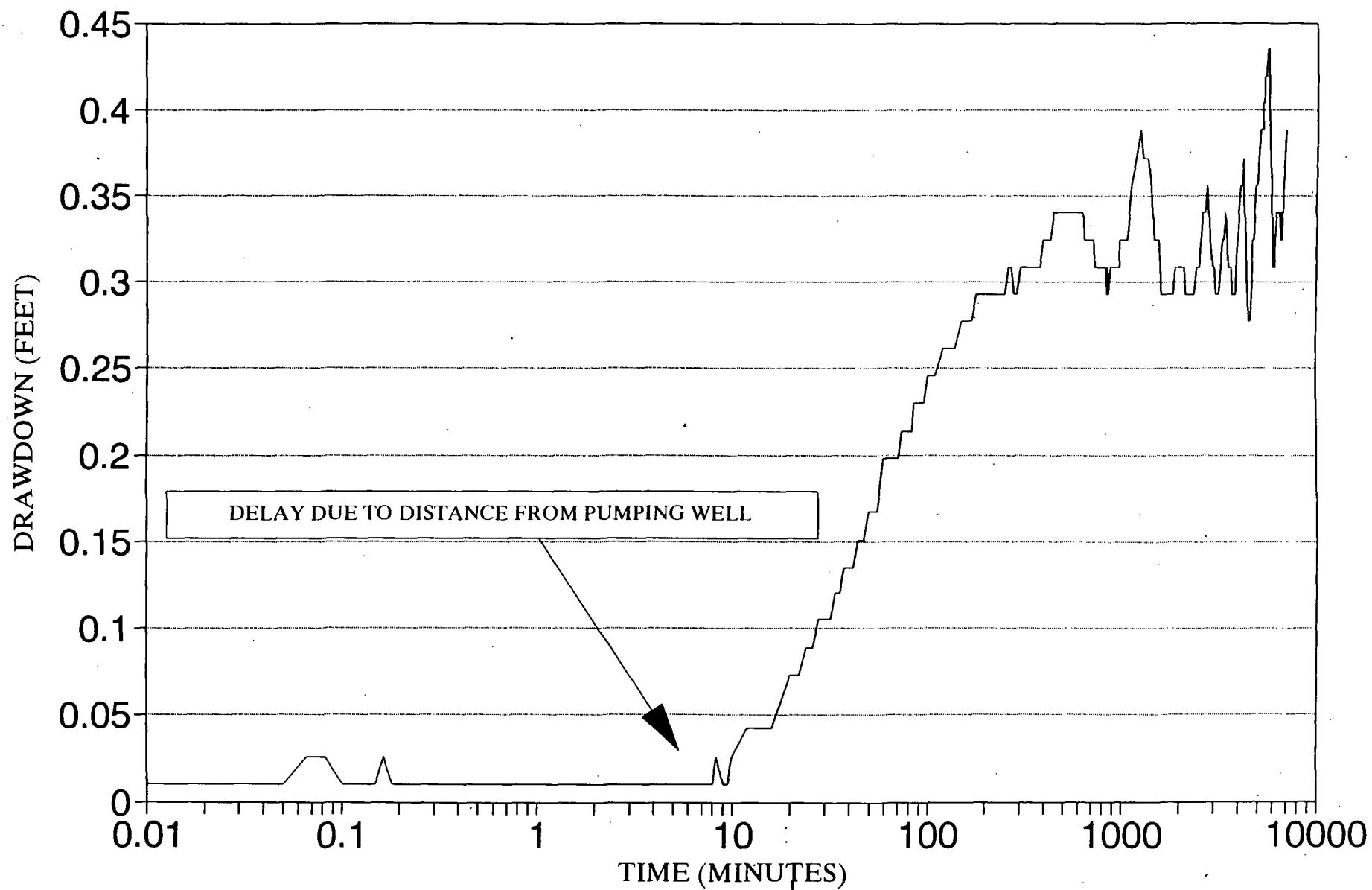


Figure 5 compares MW-14 with a typical time-drawdown curve (e.g., Thesis). Beginning at approximately 900 minutes, the monitored data stabilizes while drawdown continues to increase on the Thesis curve. Drawdown data in other wells near the Jackson Clay pinch-out also displayed these types of negligible fluctuations.

## **8.0 DATA ANALYSIS AND RESULTS**

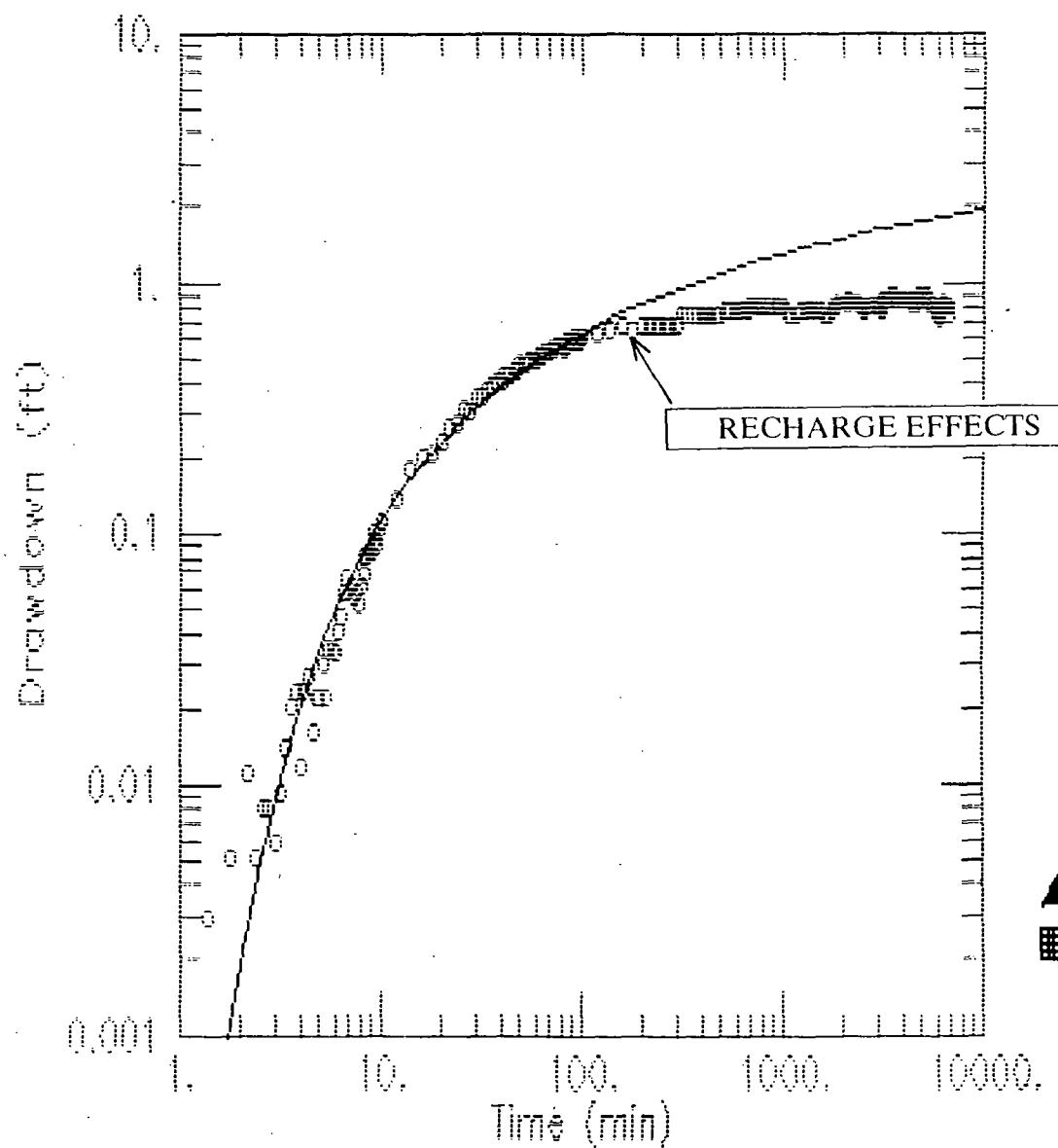
Deep well data were compiled for use in characterizing the lower aquifer and the effects of the aquifer test. Geraghty and Miller's AQTESOLV software package was used to estimate transmissivities and storage coefficients for all deep wells surveyed. The AQTESOLV method employed assumes unsteady flow to a well in a confined aquifer. Only data collected during the single well test and second recovery period were used due to limiting assumptions in AQTESOLV.

AQTESOLV is not designed to estimate aquifer characteristics from aquifer tests utilizing two or more wells. Therefore, the two well test and first recovery period were not used for direct calculation of transmissivities or storage coefficients. Instead, drawdown data from these tests were used to compare the observed zone of depression with capture zone model results.

### **8.1 AQTESOLV Method Selection**

Deep well drawdown data were analyzed using the Hantush Leaky/Semi-Confined, Thesis Confined, Cooper-Jacob Confined, and Thesis Recovery Confined methods in AQTESOLV. The Hantush method yielded the lowest transmissivity values. However, information on the leakage characteristics of the aquitard is uncertain, and lower transmissivity values yield larger, less conservative capture zones. Therefore, Hantush results were discarded in favor of the more conservative confined solutions.

FIGURE 5



COMPARISON OF MW-14 AND THEIS CURVE

## 8.2 Selection, Correction, and Analysis of Drawdown Data Sets

All wells were first analyzed using uncorrected data. As expected, the uncorrected values yielded a wide range of transmissivities. To refine aquifer characteristic estimates, data sets were corrected to account for the effects of barometric pressure variations, large distances between observation and pumping wells, well storage, and proximity to recharge boundaries (Section 6). Table 4 summarizes transmissivity and storage coefficient results for all uncorrected and corrected data sets.

APT1, APT2, MW-14, MW-1, and MW-10 data sets were corrected for the effects of barometric pressure (Dawson and Istok, 1991). Corrected data sets were then run on AQTESOLV. Results indicated little significant difference between the corrected and uncorrected data set transmissivity results. For example, barometric corrections decreased transmissivity estimates for APT1 from 31.26 ft<sup>2</sup>/min (uncorrected) to 29.32 ft<sup>2</sup>/min; a similar change was noted in MW-14, which changed from 53.69 ft<sup>2</sup>/min to 47.87 ft<sup>2</sup>/min.

Selected data sets were then corrected for the effects of distance from the pumping well. As explained in Section 7.3, negligible changes were observed in early observation well drawdown far from the pumping well. To account for this phenomena, early data (1 to 10 minutes) were deleted from data sets for wells located far from the pumping well, such as MW-14, MW-6, MW-1, and MW-10. Without this correction, transmissivity estimates would be artificially high, as is illustrated in the comparison of MW-14 transmissivity values: a transmissivity of 53.69 ft<sup>2</sup>/min was estimated using uncorrected data, while an estimate made using corrected data was decreased to 47.72 ft<sup>2</sup>/min.

Selected data sets were also corrected for the effects of pumping well storage. Well storage effects contributed to fluctuations in early observation well drawdown very near the pumping well (Section 7.2). To account for these fluctuations, early data (1 to 2 minutes) were deleted from data sets for APT1 and APT2, which were located very near the pumping well. Without

this correction, transmissivity estimates would be artificially low, as is illustrated in the comparison of APT1 transmissivity values: a transmissivity of 31.26 ft<sup>2</sup>/min was estimated using uncorrected data, while an estimate made using corrected data was increased to 35.21 ft<sup>2</sup>/min.

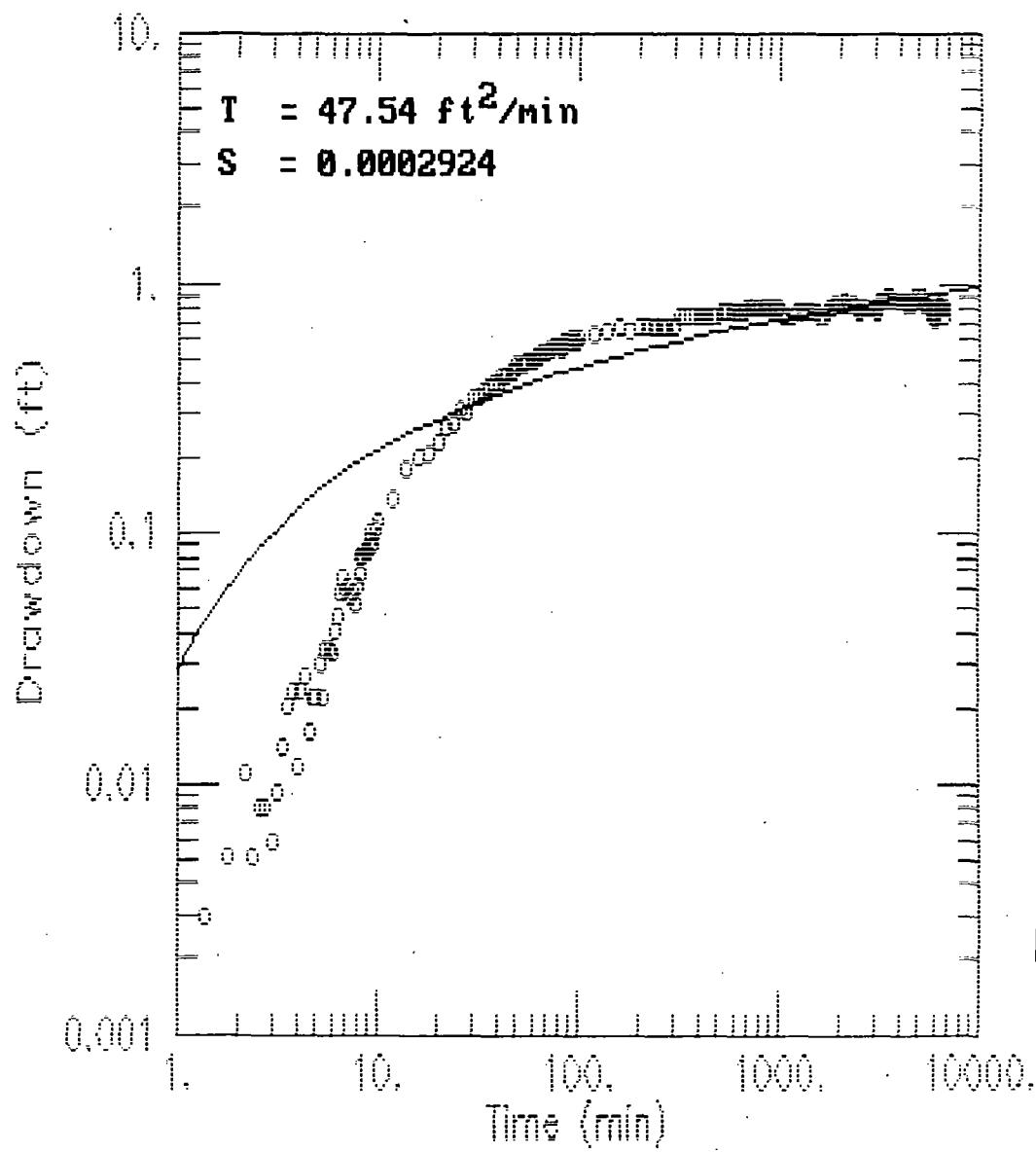
Selected data sets were also corrected for the effects of a recharge boundary. As explained in Section 7.4, a recharge boundary contributed to negligible changes in late observation well drawdown near the Jackson Clay pinch-out. Therefore, late time data (beginning as early as 500 minutes) were deleted from data sets for wells located near the Jackson Clay pinch-out. Without this correction, transmissivity estimates would be artificially high. For example, a transmissivity of 139.35 ft<sup>2</sup>/min was estimated using uncorrected MW-6 data, while an estimate made using the truncated MW-6 data set was decreased to 60.51 ft<sup>2</sup>/min.

Corrected data sets were then applied to AQTESOLV. To further refine estimates of the aquifer parameters, the AQTESOLV plot-graph function was employed to manually adjust computer estimated match curves to better represent field data. Manual curve matching was performed on data sets for wells APT1, APT2, MW-14, MW-6, and MW-58. Wells MW-1 and MW-10 were not adjusted because of an insufficient number of data points to produce a representative curve and a lack of early time data (< 100 minutes). The manual refining method is illustrated using MW-14 data.

#### **Manual Refining Method:**

Figure 6 shows the AQTESOLV computer generated Thesis approximation for MW-14. The early portion of the MW-14 curve, representing the most reliable data, does not correspond with the Thesis curve; instead, later data (which were deemed less reliable due to recharge) is matched to the Thesis curve. When the AQTESOLV curve matching function is used to match the drawdown data taken after 10 minutes and before 1000 minutes, as shown in Figure 7, a more accurate transmissivity estimate can be obtained.

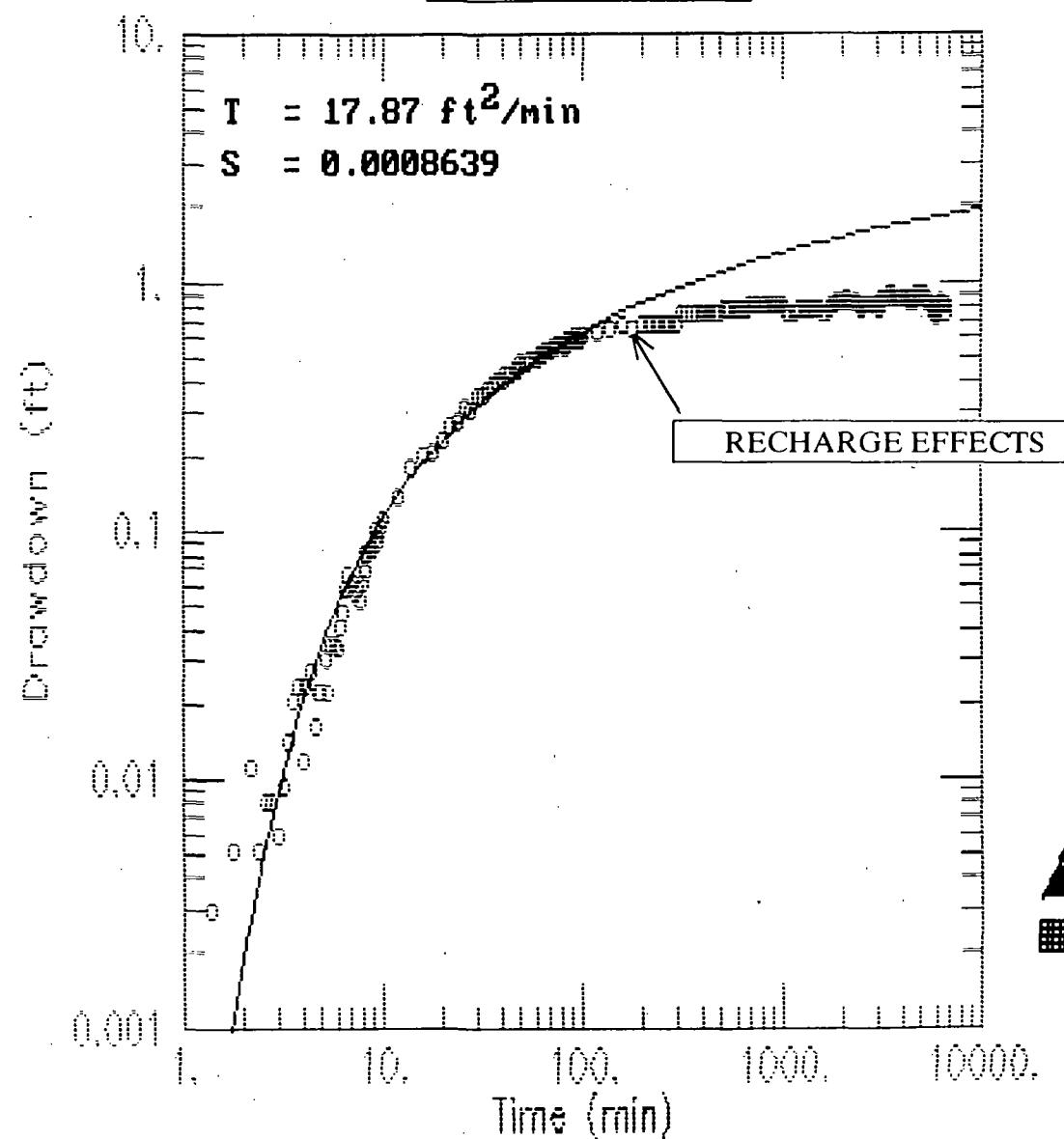
**FIGURE 6**



AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

**MW-14 USING AQTESOLV ESTIMATED CURVE**

**FIGURE 7**



**MW-14 USING MANUAL CURVE FITTING (AQTESOLV)**

Carrier, Collierville  
Draft Aquifer Pumping Test Report  
December 14, 1992

Table 4  
AQTESOLV Results

Well	Methods	Transmissivity (ft <sup>2</sup> /min)	Storage Coefficient	Notes
APT1	THESIS	31.26	0.0339	
	THESIS	29.32	0.385	B.C.
	THESIS	35.21	0.0135	> 2 MINUTES
	COOPER-JACOB	31.72	0.0211	B.C.
	COOPER-JACOB	35.14	0.0137	> 2 MINUTES
	THESIS RECOVERY	28.99	—	B.C.
	HANTUSH	20.81	—	
	THESIS	29.23	0.2516	MANUALLY ADJUST
	COOPER-JACOB	19.00	0.07	MANUALLY ADJUST
APT2	THESIS	34.13	0.0028	
	COOPER-JACOB	36.97	0.0016	
	COOPER-JACOB	37.12	—	
	THESIS RECOVERY	30.25	—	> 2 MINUTES
	THESIS	14.28	0.0106	MANUALLY ADJUST
	COOPER-JACOB	18.00	0.007	MANUALLY ADJUST
	THESIS RECOVERY	18.00	—	MANUALLY ADJUST
MW6	THESIS	139.35	0.00007	
	THESIS	141.43	0.000000	B.C.; > 9 MINUTES
	THESIS	60.51	63	B.C.; 9-500 MINUTES
	COOPER-JACOB	63.89	0.0007	< 500 MINUTES
	THESIS RECOVERY	76.66	—	9-500 MINUTES
	RECOVERY	46.31	0.0006	
	HANTUSH	41.58	—	
	THESIS	40.00	—	MANUALLY ADJUST
	COOPER-JACOB	52.00	0.001	MANUALLY ADJUST
	THESIS RECOVERY	43.00	0.0007	MANUALLY ADJUST
MW14	THESIS	53.69	0.0003	
	THESIS	47.72	0.0003	B.C., > 1 MINUTE
	THESIS	47.87	0.0003	B.C.
	COOPER-JACOB	51.83	0.0002	B.C.
	RECOVERY	44.24	—	
	RECOVERY	48.61	—	B.C.
	HANTUSH	33.57	—	B.C.
	THESIS	17.87	0.0009	B.C., MAN. ADJUST
	COOPER-JACOB	24.00	0.0006	B.C., MAN. ADJUST
	THESIS RECOVERY	27.00	—	B.C., MAN. ADJUST
MW58	THESIS	46.97	0.0002	
	COOPER-JACOB	56.02	0.000084	
	HANTUSH	45.06	—	
	THESIS	17.00	0.0008	MANUALLY ADJUST
	COOPER-JACOB	20.00	0.0006	MANUALLY ADJUST
	THESIS RECOVERY	23.00	—	MANUALLY ADJUST

**Table 4**  
**AQTESOLV Results**

Well	Methods	Transmissivity (ft <sup>2</sup> /min)	Storage Coefficient	Notes
MW1*	THESIS	125.5	0.0007	< 700 MINUTES
	THESIS	45.42	0.003	
	COOPER-JACOB	58.37	0.0021	< 700 MINUTES
	HANTUSH	45.45		
MW10*	THESIS	129.7	0.0005	< 900 MINUTES
	THESIS	59.45	0.0023	
	COOPER-JACOB	65.7	0.0018	< 900 MINUTES

Note: B.C. : Barometric Correction Applied

\* : MW-1 and MW-10 lacked sufficient data points to manually adjust match curves

### 8.3 Development of Maximum Transmissivity Estimate

All transmissivity results were qualitatively assessed and compared with previous aquifer test results. The manually refined match curve estimates displayed the most consistency among results generated during this test and are comparable to results obtained during previous aquifer tests. Therefore, the design transmissivity was derived from the manually refined match-curve data.

Manually refined AQTESOLV results were then applied to a *Student's t* statistical distribution using the following formula:

$$I = \bar{X} + \frac{1.761\sigma}{n}$$

Where: I = 95 percent confidence interval

X = Mean value of manually adjusted data set

$\sigma$  = Standard Deviation of data set

n = Number of Values in data set

A 95 percent confidence interval was applied, meaning that there is a 95 percent probability that the actual transmissivity falls between the maximum and minimum estimates. The maximum value (95 percent upper confidence limit) obtained was 26.54 ft<sup>2</sup>/min, and the minimum value (95 percent lower confidence limit) determined was 23.76 ft<sup>2</sup>/min.

#### 8.4 Vertical Conductivity Through the Jackson Clay

Relative vertical conductivity data were estimated for the Jackson Clay series using the Hantush solution for a Semi-Confining Aquifer with Storage in Aquitards (AQTESOLV). Data for deep wells 4, 6, 14, and 58 were input into the AQTESOLV module and one the Hantush  $\beta$  curves was manually selected to fit each data set. After the primary aquifer parameters were estimated (transmissivity, storage coefficient, and  $\beta$  value), the equation describing the  $\beta$  curve was used to obtain a relative estimate of K'S' for each of the four data sets:

$$\beta = \frac{r}{4} \left[ \frac{(K'S')^{0.5}}{(b'TS)^{0.5}} + \frac{(K''S'')^{0.5}}{(b''TS)^{0.5}} \right]$$

Where:

- |     |   |  |
|-----|---|--|
| T   | = | transmissivity of aquifer                                      |
| S   | = | coefficient of storage of aquifer                              |
| b'  | = | thickness of aquitard overlying aquifer                        |
| K'  | = | vertical hydraulic conductivity of aquitard overlying aquifer  |
| S'  | = | coefficient of storage of aquitard overlying aquifer           |
| b'' | = | thickness of aquitard underlying aquifer                       |
| K'' | = | vertical hydraulic conductivity of aquitard underlying aquifer |
| S'' | = | coefficient of storage of aquitard underlying aquifer          |

This equation may be used to estimate leakage parameters for both the upper and lower aquitards of a semi-confined aquifer. In this case, it was applied to determine the characteristics of the Jackson Clay unit. The vertical conductivity and storage coefficient of the lower confining unit were assumed to be negligible due to the thickness of the Memphis Sands aquifer.

Assuming constant storativity ( $S'$ ) throughout the Jackson Clay,  $K'S'$  gives a relative indication of the vertical conductivity ( $K'$ ) of the Jackson Clay. Estimates for  $K'$  ranged from  $2.18 \times 10^{-11}$  ft/min at MW-58 to  $1.72 \times 10^{-4}$  ft/min at MW-4.  $K'$  estimates were also obtained for MW-6 and MW-14 ( $1.18 \times 10^{-8}$  ft/min and  $6.90 \times 10^{-8}$  ft/min, respectively). These results indicate the relative conductivity of the aquitard near the northwest portion of the site is much lower than the southeast area of the site.

The higher rate of vertical leakage near the Southeast portion of the site can be attributed to voids through the Jackson Clay unit, thinner layers of the clay where it exists, and flow over the edge of the clay where the aquifer is no longer confined. The lower rate of vertical leakage near the north and west portions of the site can be attributed to the clay unit being thicker and more continuous.

It is important to note, however, that these estimates are relative and have been used only to characterize the general behavior of the aquitard. The storage capacity and other leakage characteristics of the Jackson Clay are still unknown.

The connection between the Memphis Sands Aquifer and the Nonconnah Creek was also assessed during the data analysis process. However, no relationship between water level trends in deep wells MW-59, MW-61, and MW-16 and creek depth was observed. Thus no apparent hydraulic connection between the aquifer and the creek was observed during this test.

## **9.0 RESSQC CAPTURE ZONE MODELLING**

RESSQC is a public access, EPA-approved groundwater model that can be used to delineate time related capture zones for a system of one or more pumping wells in a homogeneous confined aquifer. RESSQC was applied to both single and dual well scenarios to estimate the extent of containment currently provided by the municipal well field and to predict future capture zones for potential groundwater recovery systems.

### **9.1 RESSQC Preliminary Input**

RESSQC was first applied using varying data sets to study the sensitivity of the model to changes in selected input values. The model was applied using 30 day, 1 year, 5 year, and steady state time intervals to display the extent of capture zones at different periods. Groundwater gradient and direction of groundwater flow were derived from graphic analysis of static water level data. Pumping rates, transmissivities, aquifer thickness, aquifer porosity, and the number of pumping wells were varied between scenarios to simulate different conditions.

To estimate the ambient direction of groundwater flow and the groundwater gradient, all pumping operations were discontinued for more than 48 hours prior to measuring static water levels in each monitoring well. Static water level data obtained prior to each aquifer period were then applied to SURFER Version 5.15 (Golden Software Inc., 1990) to produce a potentiometric surface map of the site (Figure 8). The ambient direction of groundwater flow was computed by drawing lines perpendicular to potentiometric contours in the direction of decreasing water elevations.

The average ambient direction of groundwater flow at this site was estimated to be N 42° W. Groundwater gradients were computed by dividing the change in water elevation over the distance between two potentiometric contour intervals in a direction parallel to groundwater flow. The average gradient across the site was estimated to be 0.00105 ft/ft. These estimates are consistent with values obtained for the Feasibility Study for this site.

Total flow pumping rates for containment modelling were set equal to 500 gallons per minute (gpm). For the West Well scenario, all pumped flow was assumed to be derived from the west well. For the dual well scenario, pumped flow was divided equally between the east and west wells at 250 gpm each. These pumping rates are consistent with average pumping rates derived from Water Plant 2 historical pumping data. Pumping rates for a future dual well groundwater recovery system were set equal 1000 gpm, with pumped flow divided equally between the two wells. 1000 gpm is the maximum current capacity of Water Plant 2 with both wells pumping.

Transmissivity values were derived from aquifer test data (Section 8.3). Input values ranged from 23.76 ft<sup>2</sup>/min to 26.54 ft<sup>2</sup>/min.

Because no soil borings installed as part of this investigation fully penetrated the Memphis Sands, aquifer thicknesses were derived from Geology and Groundwater Resources of the Memphis Sands in Western Tennessee (U.S.G.S. 1990). This source indicates that aquifer thicknesses vary from 200 to 600 feet in the vicinity of the site. Aquifer porosity was estimated from tabulated values for well graded, clean sands. Porosity values for this type of formation varied from 0.25 to 0.40 (Driscoll, 1986).

## 9.2 RESSQC Preliminary Results

As expected, the model results showed sensitivity to changes in pumping rates, transmissivities, aquifer thickness, and the number of pumping wells. Qualitative analysis of graphical model results indicated that increases in pumping rates increased the width (in a direction perpendicular to groundwater flow) of capture zones, while increases in transmissivities decreased this width. Increases in aquifer thicknesses and porosities decreased the speed at which particles moved towards the well, but did not affect the width of the capture zone. An increase in the number of wells (from one well to two), while keeping the total flow constant, widened the capture zones near the wells, but produced negligible changes in capture zone width far up gradient (near the Jackson Clay pinch-out) of the pumping wells.

### 9.3 RESSQC Design Input

Design input values for containment analysis were selected from the data set yielding the smallest, or most conservative, capture zone. The values selected are presented in Table 5.

TABLE 5  
CONTAINMENT DESIGN INPUT VALUES

DESIGN PARAMETER	DESIGN VALUE	UNITS
Number of Pumping Wells	2	Dimensionless
Pumping Rate per Well	48,250	ft <sup>3</sup> /day
	250	gpm
Transmissivity	38,260	ft <sup>2</sup> /day
	286,191	gpd/ft
Aquifer Thickness	600	ft
Porosity	0.30	Dimensionless
Direction of Ambient Flow	N 42° W	Dimensionless
Groundwater Gradient	0.00105	ft/ft

To study the path of groundwater outside the capture zone, the reverse particle tracking option was utilized during the design containment run. Six initial particle locations were selected to study the movement of any potential contamination which may exist outside the immediate boundaries of the well capture zones. Initial particle locations were placed far enough down-gradient from the pumping wells to ensure they did not lie within the capture zone.

Design input values for analysis of a potential groundwater recovery system were also selected from the data set yielding the smallest, or most conservative, capture zone. Values were the same as those for containment analysis with the exception of total pumped flow. Total flow was set equal to 1000 gpm and divided equally among the two wells to simulate the maximum possible capture zone using the existing well system. Again, the reverse particle tracking feature was utilized to study groundwater flow outside the capture zone.

MW-16, in the unconfined portion of the aquifer, was not influenced during the Two-Well Aquifer Test. However, MW-16 (Overlay Figure 9) lies within the Well Plant 2 capture zone.

This phenomena can be attributed to the direction of ambient groundwater flow. Groundwater near MW-16 flows naturally towards Water Plant 2 and will eventually enter the Water Plant's zone of influence.

#### **10.0 RECOMMENDATIONS AND CONCLUSIONS**

Containment model results indicate the capture zone extends beyond wells representative of the known limits of contamination within the Memphis Sands. These results therefore show that containment of contamination has been achieved through historical use of Water Plant 2.

If analytical results do not indicate contamination above detection limits, the containment model results can be assumed accurate, and full plume containment may be assumed. However, if analytical results indicate contamination does exist above detection limits, this contamination may have escaped containment during historic Water Plant 2 operations.

If total plume containment cannot be verified by analytical results from the supplemental observation well, the 1000 gpm groundwater recovery system should be activated to ensure containment of all contamination not yet past Well Field 2. Because this zone encompasses an area far beyond the known limits of contamination, the 1000 gpm recovery system would likely capture any contaminants which may be escaping during current Water Plant 2 operations.

**APPENDIX A**  
**REFERENCES**

## REFERENCES

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**APPENDIX B**  
**CHRONOLOGY OF EVENTS**

## **CHRONOLOGY OF EVENTS**

The dates and times for the events and activities listed below pertain to 1992. The chronology begins with the piezometer installation and continues to the end of the last recovery period.

— 1992 —

- June 16 to            Two temporary piezometers (APT1 and APT2) were installed to collect pertinent data during the tests. These piezometers were aligned perpendicular to the direction of groundwater flow. They were spaced at approximately 24 and 96 feet from the east well in a direction bearing south-southwest.
- July 16                 Equipment setup involved the installation of pressure transducers and preparation of the data logger stations. Transducers were installed in the two new piezometers, the East and West Wells, MW-6, 14 and 58.

On the morning of September 9, 48 hours before the first pumping test, both the East Well and West Well were switched off. This was intended to produce a steady state condition in the aquifer before the test.

Hand monitoring of the following wells was initiated the evening of September 9.

<b>Deep Wells</b>	<b>Shallow Wells</b>
MW-1      MW-1-B	MW-1-A    MW-3
MW-4      MW-10	MW-5      MW-9
MW-12     MW-16	MW-11     MW-27

- September 10           Nonconnah Creek at the Byhalia Road Bridge and unconfined wells MW-59 and 61 were added to the hand monitoring schedule. Collection of periodic data logger readings was initiated. Shallow wells 1-A and 11 were removed from the hand monitoring list because they were dry.
- September 10           The two-well aquifer test was intended to have a discharge rate of 1000 gallons per minute (500 gpm each for the East and West Wells).  
(continued)

However, City of Collierville Water Plant personnel discovered that one of two high service pumps was not functioning. These pumps distribute water from the onsite storage tank to the main municipal tank. With only one high service pump in operation, the discharge capabilities were limited to approximately 750 gpm.

September 11

The first test involved pumping the East and West Wells at the constant rate of approximately 400 gpm each for 53 hours. With the 750 gpm high service pump running constantly during the test, a net gain of 50 gpm was estimated. The onsite 300,000-gallon storage tank was used to store the surplus during the test. At 50 gpm, the tank should have taken four days to fill.

During a phone conversation, the EPA identified five additional wells of concern. Consequently, shallow wells MW-19, 37, 39, 41, and 59 were added to the hand monitoring schedule.

The two well aquifer test started at 3 p.m. along with hand monitoring of the selected wells and Nonconnah Creek. The data loggers were simultaneously activated with the pumping wells.

**Hand monitored well list for the two well test.:**

<b>Deep Wells</b>		<b>Shallow Wells</b>	
MW-1	MW-1-B	MW-3	MW-5
MW-4	MW-10	MW-9	MW-19
MW-12	MW-16	MW-27	MW-37
MW-59	MW-61	MW-41	

September 12

At twenty-four hours after pump startup, hand monitoring was reduced to once every 8 to 12 hours.

September 13      After 53 hours, the onsite storage tank was nearly full and the pumps had to be shut off to prevent tank overflow. The storage tank had filled faster than expected because the high service pump dropped in efficiency when faced with high nighttime head in the distribution system. The first recovery period began when both pumps were shut off at 8 p.m.

To reduce onsite manpower requirements, any wells which did not fluctuate more than 0.1 foot during the two well test were removed from the hand monitoring list. Therefore, the creek and a reduced number of wells were hand monitored during the recovery period.

**Hand monitoring list for the first recovery period.:**

<b>Deep Wells</b>	<b>Shallow Wells</b>
MW-1	MW-12
MW-4	MW-61
MW-10	

September 14      The damaged high service pump was repaired and brought back online.

September 17      Accumulated rain from the previous day measured 0.57 inch.

September 18      Accumulated rain from the previous day measured 0.08 inch.

September 21      Accumulated rain from the previous day measured 0.40 inch.  
EPA oversight personnel arrived onsite.

September 21  
(continued)      City of Collierville Water Plant personnel fixed a broken belt on one of the air stripper units in preparation for the East Well aquifer test. The transducer cable at MW-6 was vandalized and had to be temporarily spliced for the test.

A heavy rain began after all pretest preparations were made. With the forecast predicting continued heavy rains during the next 24 hours, the single well test was postponed.

While reprogramming the Hermit data loggers for a postponed start date, a malfunction in the data logger at MW-58 was discovered. In-Situ Inc. recommended returning both the Hermit and the MW-6 transducer cable before beginning the single well test. Therefore, the test was postponed indefinitely.

September 22                    Accumulated rain from the previous day measured 1.15 inches.

Replacements for the MW-6 transducer cable and the MW-58 Hermit were installed onsite. The single well test was further postponed so that the groundwater could stabilize after the rainfall on the previous day. The hand monitoring list for the single well test included the creek and the wells listed below.

**Hand monitoring list for the single well test.**

<b>Deep Wells</b>	<b>Shallow Wells</b>
MW-1      MW-4	MW-3
MW-10     MW-12	MW-13
MW-16     MW-61	MW-43

September 23                    The single well aquifer test was initiated by turning on the East Well at 2 p.m. The aquifer had 234 hours to recover between pumping events. The pumping rate during the single well test was held constant at approximately 500 gpm for 115.5 hours. Again, the data loggers were activated the instant the pump was switched on. Hand monitoring of the selected wells was initiated soon after pump startup.

September 23  
(continued)

September 24                    Twenty four hours after pump startup, hand monitoring was reduced to once every 8 to 12 hours.

- September 28      The single well test was ended at 9:30 a.m. by shutting off the East Well. Pump shutoff also marked the beginning of the second recovery period. Hand monitoring of the creek and the selected wells was continued.
- October 5      After approximately 168 hours, the second recovery period was ended. The equipment was packed up and prepared for shipping.

**APPENDIX C**  
**WATER LEVEL DATA**

**TWO WELL PUMP TEST**

## TWO WELL PUMP TEST

ELAP TM	INPUT 1 MW-14	INPUT 2 WEST	INPUT 3 EAST	INPUT 4 APT1	INPUT 5 APT2	INPUT 6 BAROME
0	-0.149	-0.329	-0.109	-0.133	-0.133	14.725
0.0083	-0.149	-0.329	-0.109	-0.133	-0.133	14.738
0.0166	-0.153	-0.329	-0.109	-0.133	-0.133	14.732
0.025	-0.149	-0.329	-0.109	-0.133	-0.133	14.736
0.0333	-0.153	-0.329	-0.109	-0.133	-0.142	14.734
0.0416	-0.149	-0.329	-0.094	-0.133	-0.133	14.73
0.05	-0.153	-0.329	-0.109	-0.142	-0.133	14.727
0.0583	-0.153	-0.329	-0.109	-0.133	-0.123	14.73
0.0666	-0.149	-0.329	-0.109	-0.133	-0.133	14.732
0.075	-0.149	-0.329	-0.109	-0.133	-0.133	14.727
0.0833	-0.149	-0.329	-0.109	-0.142	-0.133	14.727
0.0916	-0.149	-0.329	-0.094	-0.133	-0.123	14.738
0.1	-0.149	12.862	-0.094	-0.142	-0.133	14.732
0.1083	-0.153	6.817	-0.109	-0.142	-0.133	14.732
0.1166	-0.149	6.66	-0.109	-0.133	-0.133	14.73
0.125	-0.149	8.01	-0.109	-0.142	-0.123	14.734
0.1333	-0.149	8.984	-0.109	-0.142	-0.123	14.745
0.1416	-0.149	10.35	-0.109	-0.142	-0.133	14.725
0.15	-0.149	11.088	-0.109	-0.133	-0.123	14.732
0.1583	-0.149	11.952	-0.109	-0.142	-0.123	14.734
0.1666	-0.153	12.815	-0.109	-0.133	-0.123	14.738
0.175	-0.149	13.961	-0.125	-0.142	-0.123	14.741
0.1833	-0.149	14.95	-0.109	-0.142	-0.123	14.723
0.1916	-0.149	15.955	-0.109	-0.142	-0.123	14.734
0.2	-0.149	16.645	-0.125	-0.142	-0.133	14.736
0.2083	-0.149	16.897	-0.125	-0.142	-0.133	14.734
0.2166	-0.149	17.289	-0.125	-0.142	-0.123	14.716
0.225	-0.153	17.933	-0.125	-0.142	-0.123	14.732
0.2333	-0.146	18.246	-0.125	-0.142	-0.123	14.736
0.2416	-0.149	18.843	-0.125	-0.142	-0.123	14.727
0.25	-0.143	19.267	-0.125	-0.142	-0.133	14.725
0.2583	-0.146	19.612	-0.125	-0.142	-0.123	14.725
0.2666	-0.146	19.957	-0.125	-0.142	-0.123	14.745
0.275	-0.146	20.114	-0.125	-0.142	-0.123	14.727
0.2833	-0.146	20.585	-0.125	-0.142	-0.123	14.732
0.2916	-0.143	20.726	-0.125	-0.142	-0.123	14.727

0.3	-0.146	20.962	-0.109	-0.142	-0.123	14.738
0.3083	-0.149	21.401	-0.109	-0.142	-0.123	14.738
0.3166	-0.146	21.354	-0.109	-0.142	-0.123	14.725
0.325	-0.146	21.479	-0.109	-0.142	-0.123	14.734
0.3333	-0.146	21.558	-0.094	-0.142	-0.123	14.721
0.35	-0.146	21.95	-0.094	-0.142	-0.123	14.721
0.3666	-0.149	22.327	-0.094	-0.142	-0.133	14.736
0.3833	-0.149	22.452	-0.094	-0.142	-0.123	14.721
0.4	-0.149	22.484	-0.094	-0.142	-0.133	14.732
0.4166	-0.153	22.562	-0.094	-0.142	-0.133	14.73
0.4333	-0.153	24.571	-0.094	-0.142	-0.133	14.732
0.45	-0.149	22.358	-0.094	-0.152	-0.123	14.732
0.4666	-0.149	22.531	-0.094	-0.152	-0.123	14.732
0.4833	-0.153	22.578	-0.094	-0.152	-0.133	14.732
0.5	-0.153	22.578	-0.078	-0.142	-0.123	14.73
0.5166	-0.153	22.892	-0.078	-0.142	-0.123	14.732
0.5333	-0.153	23.064	-0.094	-0.142	-0.123	14.73
0.55	-0.153	23.033	-0.109	-0.152	-0.133	14.73
0.5666	-0.149	22.986	-0.109	-0.152	-0.123	14.727
0.5833	-0.153	23.237	-0.125	-0.152	-0.123	14.725
0.6	-0.149	23.268	-0.109	-0.152	-0.133	14.732
0.6166	-0.153	23.127	-0.109	-0.152	-0.133	14.738
0.6333	-0.153	23.457	-0.094	-0.142	-0.133	14.727
0.65	-0.156	23.551	-0.109	-0.152	-0.133	14.738
0.6666	-0.153	23.551	-0.109	-0.152	-0.123	14.734
0.6833	-0.153	23.488	-0.109	-0.152	-0.123	14.736
0.7	-0.153	23.551	-0.109	-0.152	-0.133	14.734
0.7166	-0.156	23.472	-0.125	-0.152	-0.133	14.725
0.7333	-0.156	23.504	.09	-0.152	-0.133	14.727
0.75	-0.156	23.268	-0.109	-0.152	-0.123	14.743
0.7666	-0.156	23.347	-0.109	-0.152	-0.133	14.73
0.7833	-0.156	23.315	-0.109	-0.152	-0.133	14.723
0.8	-0.156	23.221	-0.109	-0.152	-0.123	14.725
0.8166	-0.156	23.205	-0.125	-0.152	-0.123	14.723
0.8333	-0.153	22.986	-0.109	-0.152	-0.123	14.725
0.85	-0.156	23.001	-0.125	-0.152	-0.133	14.727
0.8666	-0.153	23.08	-0.125	-0.152	-0.123	14.745
0.8833	-0.156	22.813	-0.125	-0.152	-0.133	14.736
0.9	-0.159	22.845	-0.125	-0.152	-0.123	14.725
0.9166	-0.159	22.86	-0.141	-0.152	-0.133	14.732

0.9333	-0.156	22.766	-0.157	-0.152	-0.133	14.743
0.95	-0.156	22.688	-0.141	-0.152	-0.133	14.725
0.9666	-0.153	22.499	-0.141	-0.152	-0.123	14.723
0.9833	-0.153	22.546	-0.219	-0.152	-0.133	14.734
1	-0.153	22.39	-0.172	-0.152	-0.133	14.736
1.2	-0.149	22.531	-0.69	-0.152	-0.133	14.727
1.4	-0.149	22.845	-0.8	-0.152	-0.142	14.734
1.6	-0.149	22.719	5.999	-0.152	-0.133	14.732
1.8	-0.146	23.033	17.986	-0.199	-0.161	14.727
2	-0.143	22.923	16.415	-0.199	-0.18	14.73
2.2	-0.146	23.158	16.651	-0.171	-0.18	14.736
2.4	-0.146	23.158	16.855	-0.152	-0.171	14.725
2.6	-0.146	23.064	16.965	-0.123	-0.161	14.723
2.8	-0.149	23.472	17.028	-0.095	-0.152	14.725
3	-0.149	23.347	16.934	-0.066	-0.123	14.734
3.2	-0.146	23.535	17.059	-0.038	-0.104	14.725
3.4	-0.143	23.645	17.232	-0.019	-0.085	14.732
3.6	-0.143	23.315	17.154	0.009	-0.057	14.725
3.8	-0.146	21.903	17.264	0.038	-0.038	14.741
4	-0.137	20.24	17.311	0.047	-0.019	14.738
4.2	-0.14	19.361	17.248	0.076	0.009	14.738
4.4	-0.137	19.376	17.499	0.104	0.028	14.736
4.6	-0.134	19.188	17.515	0.114	0.047	14.734
4.8	-0.134	18.89	17.531	0.142	0.066	14.732
5	-0.131	19.031	17.593	0.161	0.085	14.732
5.2	-0.131	18.623	17.562	0.18	0.104	14.723
5.4	-0.124	19.235	17.703	0.209	0.133	14.736
5.6	-0.121	18.953	17.625	0.228	0.142	14.732
5.8	-0.121	18.56	17.562	0.247	0.161	14.718
6	-0.121	18.921	17.751	0.256	0.19	14.734
6.2	-0.118	19.392	17.688	0.275	0.199	14.73
6.4	-0.112	18.937	17.672	0.294	0.218	14.723
6.6	-0.106	19.157	16.305	0.313	0.223	14.736
6.8	-0.099	19.533	14.027	0.332	0.256	14.732
7	-0.099	19.58	11.56	0.361	0.275	14.732
7.2	-0.093	18.906	13.257	0.37	0.294	14.738
7.4	-0.09	19.502	15.221	0.37	0.313	14.723
7.6	-0.084	18.607	15.661	0.38	0.313	14.73
7.8	-0.081	19.518	15.299	0.389	0.323	14.732
8	-0.078	19.455	14.797	0.408	0.332	14.736

8.2	-0.068	19.094	13.838	0.418	0.342	14.734
8.4	-0.068	19.204	14.278	0.427	0.351	14.725
8.6	-0.062	19.094	13.76	0.437	0.37	14.721
8.8	-0.062	19.314	14.309	0.446	0.38	14.736
9	-0.056	19.486	13.791	0.465	0.389	14.736
9.2	-0.053	19.596	14.247	0.465	0.399	14.718
9.4	-0.049	19.486	14.231	0.475	0.408	14.732
9.6	-0.046	19.722	14.2	0.484	0.418	14.745
9.8	-0.046	19.957	14.451	0.494	0.427	14.734
10	-0.04	20.161	14.137	0.503	0.427	14.718
12	0.006	23.158	14.404	0.57	0.503	14.734
14	0.04	23.441	13.98	0.646	0.57	14.732
16	0.074	23.833	14.419	0.713	0.636	14.736
18	0.106	23.739	14.451	0.789	0.703	14.734
20	0.137	23.849	14.828	0.855	0.769	14.734
22	0.168	23.833	14.639	0.903	0.826	14.725
24	0.206	23.849	14.749	0.96	0.874	14.73
26	0.228	24.006	14.969	1.007	0.921	14.73
28	0.262	24.068	14.608	1.045	0.959	14.725
30	0.29	24.163	15.095	1.102	1.007	14.725
32	0.315	24.178	14.655	1.131	1.035	14.723
34	0.337	24.257	14.859	1.159	1.073	14.721
36	0.356	24.272	14.577	1.178	1.102	14.718
38	0.381	24.147	14.875	1.216	1.13	14.723
40	0.396	24.445	14.749	1.245	1.159	14.734
42	0.415	24.225	15.095	1.273	1.178	14.738
44	0.434	24.163	14.922	1.302	1.216	14.73
46	0.456	24.947	15.079	1.33	1.235	14.716
48	0.471	25.057	14.938	1.359	1.254	14.721
50	0.487	25.026	14.985	1.378	1.273	14.721
52	0.502	25.324	15.268	1.388	1.292	14.721
54	0.521	25.073	14.938	1.426	1.32	14.721
56	0.531	25.12	15.299	1.435	1.339	14.721
58	0.546	25.073	15.456	1.454	1.358	14.732
60	0.565	25.088	15.158	1.473	1.368	14.727
62	0.574	25.088	15.284	1.473	1.387	14.727
64	0.581	25.575	15.268	1.502	1.396	14.721
66	0.596	25.057	15.362	1.502	1.406	14.712
68	0.606	25.135	15.079	1.521	1.415	14.718
70	0.615	25.23	15.174	1.54	1.434	14.725

72	0.624	25.292	15.425	1.549	1.444	14.721
74	0.634	24.994	15.221	1.559	1.463	14.727
76	0.652	25.292	15.221	1.568	1.472	14.725
78	0.656	25.292	15.362	1.587	1.482	14.73
80	0.665	25.355	15.362	1.597	1.491	14.73
82	0.677	25.324	15.299	1.606	1.501	14.721
84	0.684	25.23	15.425	1.616	1.501	14.725
86	0.687	25.386	15.299	1.616	1.51	14.725
88	0.693	25.182	15.127	1.625	1.52	14.721
90	0.699	25.277	15.409	1.635	1.529	14.725
92	0.702	25.449	15.315	1.644	1.539	14.721
94	0.718	25.355	15.095	1.654	1.539	14.725
96	0.715	25.245	15.441	1.692	1.539	14.721
98	0.721	25.339	15.347	1.673	1.558	14.721
100	0.731	25.22	15.818	1.673	1.567	14.723
120	0.777	25.575	15.661	1.739	1.614	14.721
140	0.812	25.449	15.315	1.777	1.652	14.725
160	0.834	25.355	15.582	1.806	1.681	14.718
180	0.855	25.559	15.645	1.834	1.7	14.716
200	0.865	25.559	15.834	1.853	1.728	14.716
220	0.88	25.59	15.849	1.872	1.747	14.723
240	0.887	25.669	15.598	1.882	1.757	14.725
260	0.896	25.433	15.959	1.891	1.766	14.67
280	0.909	25.653	15.755	1.901	1.776	14.672
300	0.918	25.386	15.692	1.91	1.785	14.674
320	0.934	25.261	15.739	1.92	1.795	14.679
340	0.943	25.685	15.535	1.939	1.814	14.685
360	0.955	25.512	15.818	1.948	1.833	14.687
380	0.968	25.528	15.708	1.967	1.833	14.69
400	0.977	25.637	15.944	1.967	1.852	14.69
420	0.987	25.763	16.132	1.977	1.852	14.69
440	1.005	25.575	15.881	1.986	1.861	14.692
460	1.009	25.59	15.849	1.996	1.871	14.694
480	1.015	25.59	15.834	2.005	1.871	14.694
500	1.021	25.669	16.069	2.005	1.88	14.692
520	1.024	25.841	15.881	2.005	1.88	14.692
540	1.03	25.606	15.959	2.015	1.89	14.692
560	1.03	25.685	15.896	2.015	1.89	14.69
580	1.04	25.481	15.598	2.015	1.89	14.69
600	1.04	25.543	15.991	2.015	1.89	14.69

620	1.04	25.637	15.896	2.015	1.89	14.69
640	1.04	25.528	15.959	2.024	1.89	14.69
660	1.043	25.637	16.085	2.015	1.89	14.69
680	1.049	25.873	15.755	2.024	1.89	14.69
700	1.049	25.512	16.116	2.024	1.899	14.69
720	1.049	25.794	15.912	2.024	1.89	14.685
740	1.055	25.716	15.896	2.024	1.89	14.687
760	1.052	25.622	15.991	2.024	1.899	14.687
780	1.059	25.732	15.944	2.024	1.899	14.687
800	1.059	25.904	15.692	2.024	1.899	14.687
820	1.059	25.857	15.786	2.024	1.899	14.685
840	1.062	25.637	16.242	2.024	1.899	14.687
860	1.065	25.841	15.975	2.034	1.909	14.69
880	1.065	25.512	15.849	2.034	1.909	14.692
900	1.074	25.794	15.849	2.043	1.909	14.694
920	1.08	25.669	15.912	2.043	1.918	14.696
940	1.077	25.543	16.101	2.053	1.918	14.699
960	1.08	25.543	16.101	2.053	1.928	14.743
980	1.08	25.747	15.818	2.062	1.937	14.747
1000	1.084	25.81	15.849	2.062	1.937	14.749
1060	1.077	25.763	15.991	2.062	1.947	14.763
1120	1.087	25.998	16.132	2.062	1.956	14.754
1180	1.096	25.779	16.038	2.072	1.956	14.758
1240	1.096	25.747	15.834	2.062	1.956	14.752
1300	1.08	25.481	15.928	2.053	1.937	14.738
1360	1.065	25.575	15.928	2.034	1.918	14.73
1420	1.055	25.7	15.802	2.017		1.723
1480	1.027	25.747	15.912	1.93		.705
1540	1.021	25.936	15.849	1.986	1.871	14.705
1600	1.009	25.779	16.069	1.977	1.871	14.699
1660	0.999	25.465	15.865	1.986	1.871	14.703
1720	1.002	25.637	15.959	1.986	1.861	14.65
1780	1.015	25.481	16.022	2.005	1.88	14.654
1840	1.049	25.732	15.928	2.024	1.899	14.663
1900	1.068	25.732	16.116	2.043	1.918	14.668
1960	1.084	25.653	16.101	2.053	1.928	14.665
2020	1.096	25.794	15.896	2.053	1.907	14.663
2080	1.096	25.559	15.708	2.053		14.661
2140	1.084	25.81	16.179	2.053		14.657
2200	1.077	25.983	16.085	2.053	1.918	14.652

2260	1.08	25.496	16.148	2.053	1.928	14.657
2320	1.08	25.59	15.708	2.053	1.928	14.657
2380	1.093	25.496	16.164	2.072	1.937	14.668
2440	1.105	26.077	15.944	2.081	1.956	14.716
2500	1.102	25.747	16.164	2.081	1.975	14.725
2560	1.118	25.857	15.896	2.091	1.975	14.727
2620	1.121	25.575	16.085	2.101	1.975	14.727
2680	1.108	25.888	15.708	2.081	1.966	14.723
2740	1.115	25.355	15.928	2.072	1.966	14.725
2800	1.102	25.763	16.006	2.062	1.947	14.703
2860	1.077	25.512	15.802	2.034	1.928	14.699
2920	1.059	25.59	15.926	2.024	1.909	14.681
2980	1.052	25.888	15.912	2.015	1.899	14.683
3040	1.037	25.779	15.881	2.015	1.899	14.676
3100	1.04	25.59	15.928	2.015	1.899	14.674
3160	1.052	25.653	15.944	2.034	1.909	14.63

TWO WELL PUMP TEST DATA

ELAPSED INPUT 1

TIME MW-6

0	-0.135
0.0033	-0.132
0.0066	-0.139
0.01	-0.132
0.0133	-0.135
0.0166	-0.139
0.02	-0.135
0.0233	-0.132
0.0266	-0.142
0.03	-0.135
0.0333	-0.129
0.05	-0.139
0.0666	-0.139
0.0833	-0.135
0.1	-0.132
0.1166	-0.135
0.1333	-0.135
0.15	-0.132
0.1666	-0.129
0.1833	-0.132
0.2	-0.135
0.2166	-0.135
0.2333	-0.135
0.25	-0.135
0.2666	-0.129
0.2833	-0.135
0.3	-0.132
0.3166	-0.132
0.3333	-0.135
0.4166	-0.139
0.5	-0.129
0.5833	-0.135
0.6666	-0.129
0.75	-0.135
0.8333	-0.132
0.9166	-0.132
1	-0.129

1.0833	-0.123
1.1666	-0.129
1.25	-0.129
1.3333	-0.132
1.4166	-0.135
1.5	-0.135
1.5833	-0.126
1.6666	-0.126
1.75	-0.126
1.8333	-0.132
1.9166	-0.129
2	-0.126
2.5	-0.135
3	-0.132
3.5	-0.145
4	-0.139
4.5	-0.132
5	-0.129
5.5	-0.139
6	-0.142
6.5	-0.132
7	-0.12
7.5	-0.126
8	-0.123
8.5	-0.12
9	-0.123
9.5	-0.117
10	-0.12
12	-0.11
14	-0.104
16	-0.094
18	-0.085
20	-0.079
22	-0.063
24	-0.047
26	-0.047
28	-0.031
30	-0.012
32	0
34	0.012

36	0.015
38	0.031
40	0.028
42	0.038
44	0.056
46	0.066
48	0.082
50	0.082
52	0.085
54	0.094
56	0.107
58	0.12
60	0.129
62	0.126
64	0.139
66	0.145
68	0.151
70	0.164
72	0.161
74	0.161
76	0.183
78	0.186
80	0.189
82	0.202
84	0.189
86	0.205
88	0.205
90	0.215
92	0.218
94	0.227
96	0.227
98	0.23
100	0.234
110	0.253
120	0.272
130	0.287
140	0.294
150	0.306
160	0.316
170	0.325

180	0.332
190	0.335
200	0.344
210	0.338
220	0.357
230	0.36
240	0.366
250	0.37
260	0.376
270	0.379
280	0.385
290	0.392
300	0.398
310	0.401
320	0.407
330	0.417
340	0.423
350	0.43
360	0.436
370	0.442
380	0.445
390	0.452
400	0.455
410	0.458
420	0.461
430	0.468
440	0.471
450	0.474
460	0.477
470	0.48
480	0.483
490	0.487
500	0.487
510	0.49
520	0.49
530	0.493
540	0.493
550	0.496
560	0.496
570	0.496

580	0.496
590	0.499
600	0.499
610	0.502
620	0.502
630	0.502
640	0.502
650	0.502
660	0.502
670	0.506
680	0.506
690	0.506
700	0.509
710	0.506
720	0.506
730	0.506
740	0.506
750	0.506
760	0.509
770	0.509
780	0.509
790	0.509
800	0.512
810	0.512
820	0.512
830	0.512
840	0.512
850	0.515
860	0.515
870	0.518
880	0.521
890	0.521
900	0.524
910	0.528
920	0.531
930	0.534
940	0.537
950	0.54
960	0.54
970	0.543

980	0.547
990	0.55
1000	0.55
1060	0.562
1120	0.575
1180	0.581
1240	0.591
1300	0.572
1360	0.55
1420	0.518
1480	0.502
1540	0.49
1600	0.483
1660	0.474
1720	0.468
1780	0.483
1840	0.509
1900	0.524
1960	0.534
2020	0.537
2080	0.534
2140	0.531
2200	0.528
2260	0.531
2320	0.534
2380	0.55
2440	0.569
2500	0.585
2560	0.597
2620	0.6
2680	0.604
2740	0.585
2800	0.575
2860	0.556
2920	0.531
2980	0.515
3040	0.512
3100	0.506
3160	0.515

TWO WELL TEMP TEST  
ELAPSE INPUT 1  
TIME NW-58

0	-0.155
0.0033	-0.155
0.0066	-0.155
0.01	-0.155
0.0133	-0.155
0.0166	-0.155
0.02	-0.155
0.0233	-0.155
0.0266	-0.155
0.03	-0.155
0.0333	-0.155
0.05	-0.155
0.0666	-0.152
0.0833	-0.155
0.1	-0.155
0.1166	-0.155
0.1333	-0.155
0.15	-0.155
0.1666	-0.152
0.1833	-0.155
0.2	-0.155
0.2166	-0.155
0.2333	-0.155
0.25	-0.152
0.2666	-0.155
0.2833	-0.155
0.3	-0.155
0.3166	-0.152
0.3333	-0.152
0.4166	-0.155
0.5	-0.152
0.5833	-0.155
0.6666	-0.155
0.75	-0.158
0.8333	-0.155
0.9166	-0.155
1	-0.155
1.0833	-0.152
1.1666	-0.152
1.25	-0.155
1.3333	-0.155
1.4166	-0.155
1.5	-0.155
1.5833	-0.155
1.6666	-0.158
1.75	-0.158
1.8333	-0.158
1.9166	-0.158
2	-0.162

2.5	-0.155
3	-0.152
3.5	-0.139
4	-0.13
4.5	-0.111
5	-0.098
5.5	-0.082
6	-0.063
6.5	-0.041
7	-0.025
7.5	-0.003
8	0.019
8.5	0.038
9	0.47
9.5	0.073
10	0.092
12	0.158
14	0.210
16	0.273
18	0.323
20	0.381
22	0.428
24	0.47
26	0.508
28	0.543
30	0.581
32	0.612
34	0.641
36	0.673
38	0.698
40	0.724
42	0.746
44	0.768
46	0.79
48	0.809
50	0.828
52	0.847
54	0.857
56	0.879
58	0.889
60	0.908
62	0.92
64	0.933
66	0.946
68	0.955
70	0.968
72	0.978
74	0.984
76	0.997
78	1.006
80	1.016
82	1.025

84	1.032
86	1.038
88	1.048
90	1.054
92	1.057
94	1.067
96	1.067
98	1.076
100	1.086
110	1.111
120	1.136
130	1.149
140	1.162
150	1.178
160	1.187
170	1.197
180	1.2
190	1.213
200	1.225
210	1.225
220	1.238
230	1.244
240	1.251
250	1.254
260	1.26
270	1.263
280	1.27
290	1.276
300	1.282
310	1.286
320	1.295
330	1.298
340	1.308
350	1.314
360	1.321
370	1.327
380	1.33
390	1.333
400	1.336
410	1.333
420	1.346
430	1.349
440	1.352
450	1.355
460	1.359
470	1.362
480	1.365
490	1.362
500	1.368
510	1.371
520	1.371
530	1.371

540	1.375
550	1.375
560	1.371
570	1.375
580	1.375
590	1.375
600	1.378
610	1.378
620	1.378
630	1.378
640	1.378
650	1.378
660	1.378
670	1.378
680	1.378
690	1.381
700	1.381
710	1.378
720	1.378
730	1.378
740	1.378
750	1.378
760	1.381
770	1.378
780	1.381
790	1.378
800	1.381
810	1.381
820	1.381
830	1.381
840	1.384
850	1.384
860	1.384
870	1.387
880	1.39
890	1.39
900	1.394
910	1.394
920	1.397
930	1.394
940	1.403
950	1.403
960	1.406
970	1.409
980	1.409
990	1.413
1000	1.416
1060	1.422
1120	1.432
1180	1.435
1240	1.432
1300	1.419

1360	1.39
1420	1.365
1480	1.343
1540	1.33
1600	1.324
1660	1.321
1720	1.317
1780	1.33
1840	1.352
1900	1.368
1960	1.378
2020	1.378
2080	1.375
2140	1.368
2200	1.365
2260	1.368
2320	1.371
2380	1.381
2440	1.397
2500	1.413
2560	1.419
2620	1.419
2680	1.413
2740	1.397
2800	1.375
2860	1.352
2920	1.324
2980	1.314
3040	1.308
3100	1.308

TWO WELL PUMP TEST

ELAPSED MW-1

TIME DEPTH

-2585	60.17
-1695	60.16
-190	60.13
99	60.36
179	60.32
468	60.45
603	60.46
745	60.57
1230	60.52
1441	60.61
1712	60.59
2464	60.68
3145	60.59

TWO WELL PUMP T

ELAPSED MW-10

TIME DEPTH

-2556	60.06
-1645	60.2
-206	60.16
81	60.23
158	60.32
461	60.56
630	60.55
787	60.59
1243	60.55
1434	60.64
1577	60.6
1746	60.61
2451	60.7
3140	60.6

TWO WELL PUMP T

ELAPSED MW-12

TIME DEPTH

-2545	61.41
-1615	61.56
-197	61.49
91	61.68
171	61.8
510	61.96
636	61.98
779	61.98
1402	62.02
1990	62.05
2457	62.09
3133	61.99

TWO WELL PUMP T

ELAP N-13

TIME DEPTH

-133	30.45
141	30.41
224	30.42
505	30.56
648	30.56
771	30.43
1260	30.56
1427	30.51
1595	30.55
1736	30.55
2010	30.57
2473	30.6

TWO WELL PUMP T

ELAPSED MW-16

TIME DEPTH

-2520	54.82
-1635	54.59
-164	54.63
125	54.58
207	54.61
490	54.58
617	54.71
757	54.63
1456	54.72
2016	54.78
2479	54.82
3164	54.72

TWO WELL PUMP TEST

ELAPSED MW-19

TIME DEPTH

- 221	50.98
379	50.99
662	50.56
797	50.58
1150	50.98
1378	51.01
2421	51
3120	50.99

TWO WELL PUMP T

ELAPSED MW-27

TIME DEPTH

-2599	56.64
-1653	56.84
-190	57
100	56.99
438	56.96
572	56.86
725	56.95
1218	56.87
1477	56.97
1570	56.96
1752	56.95
2516	57
3146	56.94

TWO WELL PUMP TEST

ELAPSED MW-4

TIME DEPTH

-2570	55.69
-1688	55.82
-180	55.95
109	55.98
188	56.04
476	56.14
607	56.15
750	56.14
1451	56.18
1980	56.2
2470	56.22
3150	56.13

TWO WELL PUMP TEST

ELAPSED MW-43

TIME DEPTH

- 118	45.87
135	45.94
215	45.93
392	45.79
658	45.89
795	45.89
1384	45.94
2424	45.95

TWO WELL PUMP T

ELAPSED MW-5

TIME DEPTH

-2528	32.71
-1630	32.85
-151	32.86
134	32.93
215	32.93
497	32.98
623	32.85
762	32.75
1251	32.86
1461	32.65
1563	32.93
1726	32.95
2000	32.98
2484	33

## TWO WELL PUMP TEST

ELAPSED MW-59

TIME DEPTH

-1688	51.34
-180	51.55
80	51.49
176	51.48
429	51.47
580	51.32
734	51.31
1195	51.51
1487	51.42
1577	51.4
1769	51.39
2509	51.47

TWO WELL PUMP TEST

ELAPSED MW-61

TIME DEPTH

-1659	50.62
-170	50.76
90	50.83
182	50.77
421	50.45
585	50.76
738	50.8
1202	50.65
1492	50.69
1583	50.68
1777	50.69
2504	50.74
3138	50.61

TWO WELL THRU EAST WELL  
ELAPSED CREEK  
TIME DEPTH TO SURFACE

-2890	22.85
-165	22.86
170	22.9
414	22.89
1220	22.78
2496	22.82
3132	22.88
3827	22.8
5420	22.81
5811	22.62
6861	22.8
7259	22.86
8255	22.78
8695	22.54
9681	22.73
10232	22.81
11220	22.71
11620	22.78
12717	22.94
15538	22.11
16340	22.61
17055	22.82
18197	22.87

TWO WELL PUMP TEST

ELAPSED MW-3

TIME DEPTH

-2570	52.02
-1686	52.18
-176	52.43
112	52.34
191	52.31
480	52.34
609	52.33
752	52.32
1448	52.29
1918	52.28
2473	52.3

TWO WELL PUMP TEST

ELAPSED MW-37

TIME DEPTH

-27	47.62
144	47.72
222	47.72
402	47.7
684	47.7
812	47.69
1389	47.74
2416	47.72

TWO WELL PUMP TEST

ELAPSED MW-39

TIME DEPTH

-100	56.55
127	56.57
204	56.57
383	56.6
676	56.56
805	56.56
1398	56.57
2443	56.61

TWO WELL PUMP TEST

ELAPSED MW-57

TIME DEPTH

- 200	53.49
108	53.47
190	53.47
450	53.34
559	53.33
717	53.44
1170	53.47
1501	53.46
2525	53.48
3155	53.46

**FIRST RECOVERY PERIOD**

## FIRST RECOVERY PERIOD

ELAPSED TIME	INPUT 1 MW-14	INPUT 2 WEST	INPUT 3 EAST	INPUT 4 APT1	INPUT 5 APT2	INPUT 6 BAROME
0	1.059	25.763	16.069	2.043	1.909	14.634
0.0083	1.062	25.575	15.928	2.034	1.909	14.634
0.0166	1.062	25.873	15.692	2.034	1.918	14.632
0.025	1.062	21.464	15.944	2.034	1.918	14.634
0.0333	1.062	17.634	9.204	2.034	1.918	14.632
0.0416	1.062	18.105	9.675	2.043	1.918	14.632
0.05	1.062	18.607	8.889	2.034	1.918	14.632
0.0583	1.062	19.157	10.382	2.043	1.918	14.632
0.0666	1.059	18.843	9.329	2.043	1.918	14.632
0.075	1.062	18.67	7.586	2.043	1.918	14.632
0.0833	1.059	18.356	6.235	2.043	1.918	14.632
0.0916	1.062	18.215	5.277	2.043	1.918	14.632
0.1	1.059	17.462	4.9	2.053	1.909	14.632
0.1083	1.059	16.787	4.256	2.053	1.918	14.632
0.1166	1.059	15.766	3.502	2.053	1.918	14.632
0.125	1.059	14.84	2.936	2.062	1.918	14.632
0.1333	1.059	13.945	1.947	2.062	1.918	14.632
0.1416	1.055	13.27	2.01	2.062	1.918	14.632
0.15	1.059	12.077	0.942	2.062	1.918	14.632
0.1583	1.055	11.339	1.099	2.072	1.918	14.632
0.1666	1.059	10.743	0.486	2.072	1.918	14.632
0.175	1.055	10.476	-0.109	2.072	1.918	14.632
0.1833	1.059	9.706	-0.455	2.072	1.918	14.632
0.1916	1.059	9.157	-0.738	2.072	1.918	14.632
0.2	1.055	8.34	-1.083	2.072	1.928	14.632
0.2083	1.059	7.9	-1.256	2.081	1.928	14.632
0.2166	1.055	7.539	-1.837	2.081	1.928	14.632
0.225	1.059	7.178	-1.727	2.081	1.928	14.632
0.2333	1.055	6.785	-2.151	2.081	1.928	14.632
0.2416	1.059	6.424	-2.418	2.081	1.918	14.63
0.25	1.059	6.126	-2.151	2.091	1.928	14.632
0.2583	1.055	5.843	-2.543	2.081	1.928	14.632
0.2666	1.059	5.545	-2.779	2.081	1.937	14.63
0.275	1.055	5.278	-2.7	2.091	1.928	14.63
0.2833	1.059	4.979	-2.81	2.081	1.937	14.632
0.2916	1.055	4.806	-2.857	2.091	1.937	14.63

0.3	1.059	4.586	-2.842	2.091	1.928	14.63
0.3083	1.059	4.414	-3.077	2.091	1.937	14.63
0.3166	1.055	4.115	-3.281	2.091	1.937	14.63
0.325	1.059	4.021	-2.92	2.091	1.937	14.63
0.3333	1.055	3.723	-3.156	2.091	1.937	14.63
0.35	1.055	3.55	-3.313	2.091	1.937	14.63
0.3666	1.055	3.393	-3.407	2.091	1.937	14.63
0.3833	1.055	3.11	-3.548	2.091	1.947	14.63
0.4	1.055	2.874	-3.344	2.091	1.947	14.632
0.4166	1.055	2.812	-3.124	2.091	1.947	14.63
0.4333	1.055	2.717	-3.344	2.091	1.956	14.63
0.45	1.055	2.607	-3.454	2.091	1.947	14.63
0.4666	1.055	2.529	-3.548	2.091	1.947	14.63
0.4833	1.055	2.529	-3.329	2.091	1.947	14.63
0.5	1.055	2.529	-3.501	2.091	1.956	14.63
0.5166	1.055	2.497	-3.391	2.081	1.956	14.63
0.5333	1.059	2.482	-3.407	2.081	1.956	14.63
0.55	1.059	2.56	-3.266	2.081	1.956	14.63
0.5666	1.055	2.544	-3.124	2.072	1.956	14.63
0.5833	1.055	2.607	-3.25	2.072	1.956	14.63
0.6	1.065	2.639	-3.093	2.072	1.966	14.63
0.6166	1.062	2.717	-3.14	2.072	1.966	14.63
0.6333	1.062	2.796	-3.03	2.072	1.966	14.63
0.65	1.062	2.937	-2.92	2.062	1.966	14.63
0.6666	1.062	2.953	-2.936	2.062	1.966	14.63
0.6833	1.062	3.079	-2.826	2.062	1.966	14.63
0.7	1.059	3.157	-2.716	2.053	1.966	14.63
0.7166	1.059	3.236	-2.763	2.053	1.966	14.63
0.7333	1.059	3.377	-2.543	2.053	1.966	14.63
0.75	1.055	3.487	-2.528	2.053	1.966	14.63
0.7666	1.059	3.628	-2.371	2.053	1.966	14.63
0.7833	1.055	3.691	-2.434	2.053	1.966	14.63
0.8	1.059	3.801	-2.182	2.043	1.966	14.63
0.8166	1.059	3.911	-2.292	2.043	1.966	14.63
0.8333	1.059	4.052	-2.025	2.034	1.966	14.63
0.85	1.055	4.147	-2.072	2.034	1.966	14.63
0.8666	1.055	4.288	-1.931	2.034	1.966	14.63
0.8833	1.052	4.351	-1.915	2.034	1.966	14.63
0.9	1.052	4.477	-1.853	2.034	1.966	14.63
0.9166	1.055	4.634	-1.758	2.024	1.966	14.63

0.9333	1.055	4.759	-1.554	2.024	1.966	14.63
0.95	1.055	4.853	-1.538	2.015	1.966	14.63
0.9666	1.052	4.979	-1.476	2.015	1.956	14.63
0.9833	1.052	5.073	-1.429	2.015	1.956	14.63
1	1.052	5.199	-1.287	2.015	1.966	14.63
1.2	1.049	6.565	-0.266	1.977	1.937	14.632
1.4	1.055	7.398	0.628	1.948	1.918	14.634
1.6	1.052	7.869	1.224	1.92	1.899	14.634
1.8	1.049	8.073	1.46	1.891	1.871	14.634
2	1.049	8.183	1.57	1.872	1.852	14.634
2.2	1.049	8.214	1.648	1.853	1.833	14.634
2.4	1.052	8.23	1.696	1.834	1.814	14.634
2.6	1.046	8.23	1.68	1.815	1.795	14.634
2.8	1.043	8.23	1.648	1.796	1.785	14.634
3	1.04	8.214	1.711	1.777	1.757	14.637
3.2	1.04	8.183	1.696	1.758	1.747	14.634
3.4	1.037	8.199	1.727	1.749	1.728	14.634
3.6	1.034	8.167	1.743	1.73	1.719	14.634
3.8	1.03	8.183	1.743	1.711	1.7	14.634
4	1.027	8.167	1.758	1.692	1.681	14.634
4.2	1.024	8.152	1.758	1.682	1.671	14.634
4.4	1.021	8.152	1.774	1.663	1.652	14.634
4.6	1.018	8.12	1.758	1.654	1.633	14.634
4.8	1.027	8.089	1.743	1.635	1.624	14.634
5	1.018	8.073	1.727	1.625	1.605	14.634
5.2	1.009	8.042	1.711	1.606	1.595	14.634
5.4	1.002	7.995	1.711	1.597	1.586	14.634
5.6	0.999	7.979	1.68	1.587	1.567	14.634
5.8	0.996	7.947	1.664	1.568	1.558	14.634
6	0.99	7.916	1.664	1.559	1.548	14.634
6.2	0.987	7.9	1.648	1.549	1.539	14.634
6.4	0.984	7.869	1.633	1.53	1.52	14.634
6.6	0.98	7.837	1.617	1.521	1.51	14.634
6.8	0.984	7.822	1.601	1.502	1.491	14.634
7	0.974	7.806	1.586	1.492	1.491	14.634
7.2	0.971	7.79	1.586	1.483	1.472	14.634
7.4	0.968	7.759	1.57	1.464	1.463	14.634
7.6	0.965	7.743	1.554	1.454	1.444	14.634
7.8	0.959	7.728	1.523	1.445	1.434	14.637
8	0.955	7.712	1.523	1.435	1.434	14.634

8.2	0.949	7.68	1.523	1.426	1.415	14.637
8.4	0.946	7.665	1.507	1.416	1.406	14.637
8.6	0.949	7.665	1.491	1.407	1.396	14.637
8.8	0.94	7.618	1.476	1.388	1.387	14.634
9	0.934	7.602	1.46	1.378	1.368	14.634
9.2	0.93	7.602	1.491	1.369	1.368	14.634
9.4	0.927	7.68	1.444	1.34	1.358	14.637
9.6	0.924	7.492	1.413	1.33	1.32	14.634
9.8	0.921	7.539	1.413	1.292	1.311	14.634
10	0.915	7.461	1.429	1.311	1.292	14.634
12	0.877	7.429	1.397	1.254	1.244	14.632
14	0.843	7.366	1.35	1.169	1.159	14.634
16	0.809	7.382	1.272	1.093	1.083	14.637
18	0.777	7.366	1.209	1.026	1.016	14.634
20	0.743	7.288	1.146	0.969	0.959	14.634
22	0.712	7.241	1.083	0.912	0.902	14.634
24	0.681	7.194	1.036	0.865	0.855	14.634
26	0.656	7.146	0.989	0.817	0.807	14.637
28	0.627	7.099	0.942	0.779	0.769	14.637
30	0.602	7.052	0.895	0.732	0.731	14.637
32	0.577	7.021	0.863	0.694	0.693	14.637
34	0.556	6.989	0.816	0.665	0.665	14.639
36	0.537	6.958	0.8	0.636	0.636	14.639
38	0.515	6.927	0.769	0.608	0.608	14.639
40	0.496	6.895	0.738	0.579	0.579	14.639
42	0.474	6.864	0.706	0.551	0.551	14.639
44	0.459	6.832	0.69	0.532	0.522	14.641
46	0.443	6.817	0.659	0.503	0.503	14.639
48	0.424	6.801	0.643	0.484	0.484	14.641
50	0.412	6.77	0.612	0.465	0.465	14.641
52	0.396	6.754	0.596	0.446	0.446	14.641
54	0.381	6.738	0.581	0.427	0.427	14.641
56	0.368	6.707	0.565	0.408	0.408	14.641
58	0.359	6.691	0.549	0.399	0.389	14.641
60	0.34	6.691	0.533	0.38	0.38	14.641
62	0.331	6.675	0.518	0.361	0.361	14.641
64	0.318	6.66	0.502	0.361	0.351	14.641
66	0.309	6.644	0.486	0.342	0.342	14.641
68	0.296	6.628	0.471	0.323	0.323	14.641
70	0.287	6.613	0.471	0.323	0.313	14.643

72	0.278	6.597	0.455	0.313	0.304	14.643
74	0.268	6.597	0.439	0.294	0.294	14.643
76	0.262	6.581	0.439	0.285	0.285	14.643
78	0.249	6.565	0.424	0.275	0.275	14.645
80	0.243	6.565	0.424	0.266	0.266	14.643
82	0.234	6.55	0.408	0.256	0.256	14.645
84	0.231	6.55	0.392	0.247	0.247	14.645
86	0.221	6.534	0.392	0.247	0.237	14.645
88	0.215	6.518	0.392	0.237	0.228	14.645
90	0.209	6.518	0.376	0.228	0.228	14.645
92	0.203	6.518	0.361	0.218	0.218	14.645
94	0.193	6.503	0.361	0.218	0.209	14.645
96	0.19	6.487	0.361	0.209	0.199	14.645
98	0.184	6.487	0.345	0.209	0.199	14.645
100	0.178	6.487	0.345	0.199	0.19	14.645
120	0.134	6.44	0.282	0.161	0.142	14.648
140	0.099	6.393	0.251	0.123	0.104	14.648
160	0.071	6.377	0.204	0.095	0.076	14.648
180	0.049	6.346	0.188	0.066	0.047	14.648
200	0.043	6.33	0.172	0.047	0.028	14.65
220	0.015	6.314	0.141	0.028	0.019	14.648
240	0.003	6.298	0.125	0.009	0	14.645
260	-0.003	6.283	0.109	0	-0.019	14.645
280	-0.021	6.267	0.094	-0.019	-0.028	14.643
300	-0.031	6.267	0.094	-0.028	-0.038	14.645
320	-0.04	6.251	0.078	-0.038	-0.047	14.645
340	-0.049	6.251	0.078	-0.038	-0.057	14.645
360	-0.059	6.236	0.062	-0.057	-0.066	14.645
380	-0.062	6.236	0.062	-0.057	-0.066	14.645
400	-0.059	6.22	0.047	-0.066	-0.076	14.643
420	-0.078	6.22	0.047	-0.076	-0.085	14.643
440	-0.084	6.22	0.031	-0.085	-0.095	14.643
460	-0.09	6.204	0.031	-0.095	-0.095	14.643
480	-0.096	6.204	0.015	-0.095	-0.104	14.641
500	-0.099	6.204	0.015	-0.104	-0.114	14.641
520	-0.106	6.188	0	-0.104	-0.114	14.641
540	-0.106	6.188	0	-0.114	-0.114	14.641
560	-0.112	6.188	0	-0.114	-0.114	14.645
580	-0.099	6.188	0	-0.114	-0.114	14.645
600	-0.112	6.188	0	-0.123	-0.123	14.648

620	-0.112	6.188	-0.015	-0.123	-0.123	14.65
640	-0.112	6.188	0	-0.123	-0.123	14.652
660	-0.112	6.188	-0.015	-0.123	-0.123	14.694
680	-0.118	6.188	-0.015	-0.123	-0.123	14.703
700	-0.118	6.188	-0.015	-0.123	-0.123	14.696
720	-0.121	6.188	-0.015	-0.123	-0.133	14.707
740	-0.124	6.188	-0.015	-0.123	-0.123	14.692
760	-0.134	6.188	-0.015	-0.133	-0.133	14.705
780	-0.131	6.173	-0.031	-0.133	-0.133	14.71
800	-0.134	6.173	-0.031	-0.142	-0.133	14.71
820	-0.137	6.173	-0.031	-0.142	-0.123	14.705
840	-0.137	6.173	-0.031	-0.142	-0.133	14.692
860	-0.131	6.173	-0.031	-0.142	-0.133	14.707
880	-0.137	6.173	-0.047	-0.152	-0.133	14.703
900	-0.137	6.173	-0.047	-0.152	-0.152	14.71
920	-0.14	6.157	-0.062	-0.161	-0.152	14.699
940	-0.143	6.157	-0.047	-0.161	-0.152	14.705
960	-0.153	6.141	-0.078	-0.18	-0.161	14.707
980	-0.149	6.157	-0.094	-0.18	-0.18	14.694
1000	-0.156	6.141	-0.062	-0.161	-0.161	14.705
1060	-0.174	6.126	-0.078	-0.18	-0.171	14.699
1120	-0.178	6.11	-0.094	-0.199	-0.19	14.699
1180	-0.212	6.094	-0.141	-0.237	-0.218	14.685
1240	-0.228	6.079	-0.125	-0.228	-0.218	14.681
1300	-0.24	6.047	-0.141	-0.237	-0.247	14.676
1360	-0.249	6.031	-0.157	-0.247	-0.256	14.676
1420	-0.246	6.079	-0.125	-0.237	-0.237	14.637
1480	-0.231	6.094	-0.125	-0.237	-0.218	14.645
1540	-0.209	6.094	-0.109	-0.228	-0.218	14.65
1600	-0.193	6.11	-0.094	-0.218	-0.199	14.654
1660	-0.181	6.11	-0.094	-0.209	-0.199	14.663
1720	-0.171	6.126	-0.078	-0.209	-0.199	14.659
1780	-0.174	6.126	-0.094	-0.209	-0.199	14.659
1840	-0.187	6.11	-0.094	-0.209	-0.209	14.661
1900	-0.19	6.126	-0.094	-0.218	-0.209	14.663
1960	-0.187	6.126	-0.094	-0.209	-0.209	14.67
2020	-0.174	6.126	-0.078	-0.209	-0.199	14.674
2080	-0.178	6.141	-0.078	-0.199	-0.199	14.683
2140	-0.165	6.141	-0.062	-0.18	-0.18	14.738
2200	-0.149	6.157	-0.047	-0.171	-0.161	14.736

2260	-0.14	6.173	-0.047	-0.161	-0.152	14.752
2320	-0.14	6.188	-0.031	-0.152	-0.142	14.758
2380	-0.146	6.173	-0.062	-0.171	-0.171	14.76
2440	-0.159	6.141	-0.062	-0.171	-0.171	14.741
2500	-0.178	6.126	-0.078	-0.209	-0.199	14.738
2560	-0.199	6.11	-0.094	-0.209	-0.218	14.73
2620	-0.228	6.079	-0.125	-0.237	-0.237	14.712
2680	-0.249	6.079	-0.141	-0.256	-0.256	14.705
2740	-0.274	6.063	-0.157	-0.285	-0.266	14.705
2800	-0.293	6.047	-0.157	-0.294	-0.285	14.714
2860	-0.296	6.047	-0.157	-0.294	-0.285	14.665
2920	-0.293	6.063	-0.141	-0.294	-0.285	14.672
2980	-0.293	6.063	-0.141	-0.275	-0.275	14.672
3040	-0.284	6.079	-0.125	-0.275	-0.275	14.676
3100	-0.274	6.079	-0.125	-0.275	-0.275	14.676
3160	-0.271	6.079	-0.125	-0.266	-0.275	14.676
3220	-0.274	6.079	-0.125	-0.275	-0.275	14.674
3280	-0.281	6.079	-0.141	-0.285	-0.285	14.672
3340	-0.284	6.063	-0.141	-0.294	-0.285	14.672
3400	-0.278	6.063	-0.141	-0.294	-0.294	14.672
3460	-0.278	6.063	-0.141	-0.294	-0.294	14.674
3520	-0.281	6.063	-0.141	-0.285	-0.294	14.676
3580	-0.281	6.063	-0.141	-0.285	-0.285	14.727
3640	-0.274	6.063	-0.141	-0.294	-0.275	14.738
3700	-0.281	6.063	-0.141	-0.304	-0.294	14.723
3760	-0.293	6.063	-0.157	-0.304	-0.294	14.723
3820	-0.299	6.047	-0.172	-0.313	-0.313	14.727
3880	-0.321	6.031	-0.188	-0.342	-0.323	14.71
3940	-0.334	6.016	-0.204	-0.342	-0.332	14.71
4000	-0.368	6	-0.235	-0.38	-0.361	14.692
4060	-0.384	5.969	-0.235	-0.389	-0.38	14.699
4120	-0.409	5.969	-0.251	-0.408	-0.389	14.692
4180	-0.418	5.953	-0.266	-0.418	-0.399	14.676
4240	-0.44	5.953	-0.266	-0.427	-0.418	14.665
4300	-0.443	5.953	-0.266	-0.427	-0.418	14.615
4360	-0.44	5.953	-0.251	-0.418	-0.408	14.621
4420	-0.428	5.969	-0.235	-0.408	-0.399	14.626
4480	-0.406	5.984	-0.219	-0.389	-0.38	14.634
4540	-0.403	6	-0.219	-0.38	-0.38	14.63
4600	-0.396	6	-0.204	-0.38	-0.38	14.626

4660	-0.39	6	-0.219	-0.38	-0.38	14.623
4720	-0.399	5.984	-0.219	-0.389	-0.389	14.619
4780	-0.403	5.984	-0.219	-0.399	-0.399	14.612
4840	-0.412	5.984	-0.235	-0.399	-0.408	14.61
4900	-0.412	5.969	-0.235	-0.408	-0.408	14.612
4960	-0.403	5.984	-0.235	-0.399	-0.399	14.617
5020	-0.415	5.984	-0.219	-0.389	-0.389	14.663
5080	-0.406	5.984	-0.219	-0.399	-0.389	14.659
5140	-0.399	5.984	-0.219	-0.399	-0.389	14.672
5200	-0.387	6	-0.219	-0.389	-0.389	14.663
5260	-0.39	6	-0.219	-0.389	-0.389	14.661
5320	-0.409	5.984	-0.251	-0.408	-0.399	14.659
5380	-0.421	5.969	-0.251	-0.427	-0.427	14.641
5440	-0.412	5.906	-0.329	-0.513	-0.475	14.615
5500	-0.399	5.906	-0.314	-0.484	-0.475	14.621
5560	-0.393	5.906	-0.298	-0.484	-0.475	14.586
5620	-0.421	5.921	-0.298	-0.484	-0.484	14.584
5680	-0.421	5.906	-0.298	-0.484	-0.484	14.575
5740	-0.415	5.921	-0.298	-0.475	-0.475	14.561
5800	-0.431	5.921	-0.282	-0.465	-0.465	14.561
5860	-0.452	5.921	-0.282	-0.465	-0.475	14.561
5920	-0.484	5.921	-0.282	-0.465	-0.465	14.557
5980	-0.493	5.921	-0.266	-0.465	-0.465	14.557
6040	-0.502	5.921	-0.282	-0.456	-0.465	14.55
6100	-0.509	5.921	-0.282	-0.465	-0.475	14.546
6160	-0.515	5.906	-0.298	-0.475	-0.484	14.535
6220	-0.527	5.89	-0.298	-0.484	-0.484	14.533
6280	-0.527	5.89	-0.298	-0.475	-0.484	14.533
6340	-0.524	5.906	-0.298	-0.475	-0.484	14.537
6400	-0.51	5.921	-0.282	-0.456	-0.465	14.55
6460	-0.51	5.921	-0.266	-0.446	-0.446	14.575
6520	-0.493	5.937	-0.251	-0.437	-0.446	14.575

## FIRST RECOVERY PERIOD

## ELAPSED INPUT 1

TIME MW-6

0	0.521
0.0033	0.521
0.0066	0.518
0.01	0.521
0.0133	0.521
0.0166	0.521
0.02	0.521
0.0233	0.518
0.0266	0.518
0.03	0.521
0.0333	0.518
0.05	0.521
0.0666	0.518
0.0833	0.521
0.1	0.518
0.1166	0.521
0.1333	0.518
0.15	0.521
0.1666	0.521
0.1833	0.521
0.2	0.521
0.2166	0.521
0.2333	0.521
0.25	0.521
0.2666	0.521
0.2833	0.521
0.3	0.518
0.3166	0.521
0.3333	0.521
0.4166	0.521
0.5	0.521
0.5833	0.521
0.6666	0.521
0.75	0.518
0.8333	0.518
0.9166	0.521
1	0.518

1.0833	0.518
1.1666	0.518
1.25	0.518
1.3333	0.518
1.4166	0.521
1.5	0.521
1.5833	0.518
1.6666	0.521
1.75	0.521
1.8333	0.521
1.9166	0.518
2	0.521
2.5	0.521
3	0.518
3.5	0.518
4	0.518
4.5	0.518
5	0.515
5.5	0.515
6	0.515
6.5	0.515
7	0.515
7.5	0.512
8	0.512
8.5	0.509
9	0.509
9.5	0.506
10	0.506
12	0.499
14	0.49
16	0.477
18	0.464
20	0.455
22	0.442
24	0.433
26	0.42
28	0.407
30	0.395
32	0.385
34	0.373

36	0.36
38	0.351
40	0.341
42	0.332
44	0.319
46	0.309
48	0.3
50	0.294
52	0.284
54	0.275
56	0.265
58	0.259
60	0.249
62	0.243
64	0.234
66	0.227
68	0.221
70	0.215
72	0.208
74	0.202
76	0.196
78	0.189
80	0.183
82	0.18
84	0.173
86	0.17
88	0.164
90	0.158
92	0.155
94	0.151
96	0.145
98	0.142
100	0.136
110	0.117
120	0.101
130	0.088
140	0.075
150	0.063
160	0.053
170	0.041

180	0.034
190	0.025
200	0.019
210	0.012
220	0.006
230	-0.003
240	-0.006
250	-0.012
260	-0.018
270	-0.025
280	-0.031
290	-0.034
300	-0.037
310	-0.041
320	-0.047
330	-0.05
340	-0.053
350	-0.056
360	-0.06
370	-0.063
380	-0.066
390	-0.069
400	-0.072
410	-0.075
420	-0.079
430	-0.082
440	-0.085
450	-0.088
460	-0.088
470	-0.091
480	-0.094
490	-0.098
500	-0.101
510	-0.104
520	-0.107
530	-0.107
540	-0.11
550	-0.11
560	-0.11
570	-0.11

580	-0.113
590	-0.113
600	-0.113
610	-0.113
620	-0.113
630	-0.113
640	-0.113
650	-0.113
660	-0.113
670	-0.113
680	-0.11
690	-0.12
700	-0.11
710	-0.113
720	-0.104
730	-0.107
740	-0.11
750	-0.12
760	-0.11
770	-0.11
780	-0.11
790	-0.11
800	-0.113
810	-0.11
820	-0.11
830	-0.113
840	-0.12
850	-0.11
860	-0.117
	-0.117
	-0.117
900	-0.123
910	-0.117
920	-0.113
930	-0.123
940	-0.12
950	-0.11
960	-0.11
970	-0.11

980	-0.129
990	-0.142
1000	-0.129
1060	-0.117
1120	-0.164
1180	-0.189
1240	-0.199
1300	-0.211
1360	-0.218
1420	-0.221
1480	-0.211
1540	-0.199
1600	-0.189
1660	-0.183
1720	-0.183
1780	-0.189
1840	-0.189
1900	-0.192
1960	-0.186
2020	-0.18
2080	-0.173
2140	-0.161
2200	-0.139
2260	-0.12
2320	-0.12
2380	-0.12
2440	-0.129
2500	-0.158
2560	-0.186
2620	13.396
2680	13.396
2740	13.396
2800	13.396
2860	13.396
2920	13.396
2980	13.396
3040	13.396
3100	13.396
3160	13.396
3220	13.396

3280	13.396
3340	13.396
3400	13.396
3460	13.396
3520	13.396
3580	13.396
3640	13.396
3700	13.396
3760	13.396
3820	13.396
3880	13.396
3940	13.396
4000	13.396
4060	13.396
4120	13.396
4180	13.396
4240	13.396
4300	13.396
4360	13.396
4420	13.396
4480	13.396
4540	13.396
4600	13.396
4660	13.396
4720	13.396
4780	13.396
4840	13.396
4900	13.396
4960	13.396
5020	13.396
5080	13.396
5140	13.396
5200	13.396
5260	13.396
5320	13.396
5380	13.396
5440	13.396
5500	13.396
5560	13.396
5620	13.396

5680	13.396
5740	13.396
5800	13.396
5860	13.396
5920	13.396
5980	13.396
6040	13.396
6100	13.396
6160	13.396
6220	13.396
6280	13.396
6340	13.396
6400	13.396
6460	13.396
6520	13.396
6580	13.396
6640	13.396
6700	13.396
6760	13.396
6820	13.396
6880	13.396
6940	13.396
7000	13.396
7060	13.396
7120	13.396
7180	13.396
7240	13.396
7300	13.396
7360	3.396
74	13.396
7480	13.396
7540	13.396
7600	13.396
7660	13.396
7720	13.396
7780	13.396
7840	13.396
7900	13.396
7960	13.396
8020	13.396

8080	13.396
8140	13.396
8200	13.396
8260	13.396
8320	13.396
8380	13.396
8440	13.396
8500	13.396
8560	13.396
8620	13.396
8680	13.396
8740	13.396
8800	13.396
8860	13.396
8920	13.396
8980	13.396
9040	13.396
9100	13.396
9160	13.396
9220	13.396
9280	13.396
9340	13.396
9400	13.396
9460	13.396
9520	13.396
9580	13.396
9640	13.396
9700	13.396
9760	13.396
9820	13.396
9880	13.396
9940	13.396
10000	13.396
10060	13.396
10120	13.396
10180	13.396
10240	13.396
10300	13.396
10360	13.396
10420	13.396

10480	13.396
10540	13.396
10600	13.396
10660	13.396
10720	13.396
10780	13.396
10840	13.396
10900	13.396
10960	13.396
11020	13.396
11080	13.396
11140	13.396
11200	13.396

## FIRST RECOVERY PERIOD

ELAPSED INPUT 1

TIME MW-58

0	1.317
0.0033	1.314
0.0066	1.314
0.01	1.314
0.0133	1.314
0.0166	1.314
0.02	1.314
0.0233	1.314
0.0266	1.317
0.03	1.314
0.0333	1.314
0.05	1.317
0.0666	1.314
0.0833	1.314
0.1	1.317
0.1166	1.317
0.1333	1.314
0.15	1.314
0.1666	1.314
0.1833	1.314
0.2	1.314
0.2166	1.314
0.2333	1.314
0.25	1.314
0.2666	1.314
0.2833	1.314
0.3	1.314
0.3166	1.317
0.3333	1.314
0.4166	1.314
0.5	1.314
0.5833	1.314
0.6666	1.317
0.75	1.314
0.8333	1.314
0.9166	1.314
1	1.314
1.0833	1.314
1.1666	1.314
1.25	1.314
1.3333	1.314
1.4166	1.311
1.5	1.311
1.5833	1.311
1.6666	1.308
1.75	1.308
1.8333	1.305
1.9166	1.302
2	1.305

2.5	1.295
3	1.282
3.5	1.27
4	1.254
4.5	1.235
5	1.216
5.5	1.2
6	1.181
6.5	1.162
7	1.143
7.5	1.127
8	1.105
8.5	1.089
9	1.067
9.5	1.048
10	1.025
12	0.965
14	0.901
16	0.841
18	0.787
20	0.736
22	0.692
24	0.644
26	0.606
28	0.571
30	0.536
32	0.504
34	0.476
36	0.45
38	0.422
40	0.4
42	0.377
44	0.358
46	0.336
48	0.317
50	0.301
52	0.285
54	0.269
56	0.254
58	0.241
60	0.228
62	0.216
64	0.203
66	0.193
68	0.181
70	0.171
72	0.162
74	0.152
76	0.146
78	0.133
80	0.13
82	0.12

84	0.114
86	0.104
88	0.098
90	0.092
92	0.085
94	0.079
96	0.073
98	0.069
100	0.063
110	0.041
120	0.019
130	0
140	-0.015
150	-0.028
160	-0.038
170	-0.05
180	-0.063
190	-0.069
200	-0.076
210	-0.085
220	-0.092
230	-0.101
240	-0.108
250	-0.114
260	-0.12
270	-0.127
280	-0.133
290	-0.139
300	-0.146
310	-0.149
320	-0.152
330	-0.158
340	-0.162
350	-0.165
360	-0.174
370	-0.171
380	-0.174
390	-0.181
400	-0.184
410	-0.187
420	-0.19
430	-0.193
440	-0.196
450	-0.2
460	-0.203
470	-0.203
480	-0.209
490	-0.209
500	-0.212
510	-0.216
520	-0.219
530	-0.222

540	-0.222
550	-0.225
560	-0.225
570	-0.235
580	-0.228
590	-0.228
600	-0.228
610	-0.231
620	-0.231
630	-0.228
640	-0.231
650	-0.231
660	-0.235
670	-0.231
680	-0.231
690	-0.231
700	-0.231
710	-0.231
720	-0.231
730	-0.231
740	-0.235
750	-0.235
760	-0.235
770	-0.235
780	-0.235
790	-0.238
800	-0.238
810	-0.238
820	-0.241
830	-0.244
840	-0.241
850	-0.247
860	-0.244
870	-0.247
880	-0.25
890	-0.247
900	-0.25
910	-0.257
920	-0.254
930	-0.257
940	-0.257
950	-0.263
960	-0.266
970	-0.263
980	-0.273
990	-0.276
1000	-0.273
1060	-0.289
1120	-0.311
1180	-0.343
1240	-0.355
1300	-0.381

1360	-0.371
1420	-0.374
1480	-0.365
1540	-0.358
1600	-0.349
1660	-0.346
1720	-0.346
1780	-0.352
1840	-0.355
1900	-0.358
1960	-0.355
2020	-0.352
2080	-0.346
2140	-0.333
2200	-0.317
2260	-0.308
2320	-0.301
2380	-0.314
2440	-0.33
2500	-0.349
2560	-0.381
2620	-0.412
2680	-0.428
2740	-0.444
2800	-0.457
2860	-0.463
2920	-0.457
2980	-0.454
3040	-0.451
3100	-0.451
3160	-0.454
3220	-0.46
3280	-0.466
3340	-0.473
3400	-0.476
3460	-0.479
3520	-0.476
3580	-0.473
3640	-0.47
3700	-0.476
3760	-0.485
3820	-0.495
3880	-0.505
3940	-0.53
4000	-0.559
4060	-0.581
4120	-0.6
4180	-0.613
4240	-0.622
4300	-0.632
4360	-0.622
4420	-0.613

4480	-0.597
4540	-0.603
4600	-0.597
4660	-0.6
4720	-0.609
4780	-0.619
4840	-0.625
4900	-0.632
4960	-0.622
5020	-0.619
5080	-0.619
5140	-0.619
5200	-0.616
5260	-0.619
5320	-0.635
5380	-0.66
5440	-0.695
5500	-0.708
5560	-0.72
5620	-0.73
5680	-0.733
5740	-0.73
5800	-0.73
5860	-0.73
5920	-0.733
5980	-0.736
6040	-0.743
6100	-0.749
6160	-0.765
6220	-0.771
6280	-0.774
6340	-0.771
6400	-0.759
6460	-0.743
6520	-0.736
6580	-0.733
6640	-0.73
6700	-0.73
6760	-0.746
6820	-0.774
6880	-0.803
6940	-0.828
7000	-0.841
7060	-0.838
7120	-0.838
7180	-0.838
7240	-0.822
7300	-0.809
7360	-0.794
7420	-0.797
7480	-0.806
7540	-0.813

7600	-0.816
7660	-0.822
7720	-0.822
7780	-0.809
7840	-0.803
7900	-0.794
7960	-0.787
8020	-0.787
8080	-0.79
8140	-0.8
8200	-0.813
8260	-0.838
8320	-0.87
8380	-0.889
8440	-0.895
8500	-0.911
8560	-0.921
8620	-0.917
8680	-0.911
8740	-0.908
8800	-0.911
8860	-0.914
8920	-0.924
8980	-0.936
9040	-0.949
9100	-0.965
9160	-0.978
9220	-0.981
9280	-0.981
9340	-0.975
9400	-0.981
9460	-0.984
9520	-0.971
9580	-0.965
9640	-0.981
9700	-0.99
9760	-1.016
9820	-1.032
9880	-1.041
9940	-1.044
10000	-1.041
10060	-1.044
10120	-1.029
10180	-1.029
10240	-1.029
10300	-1.019
10360	-1.016
10420	-1.019
10480	-0.997

## 1ST RECOVERY (NEW LOGGER)

ELAPSED INPUT 1

TIME MW-58

0	0
0.0033	0
0.0066	0
0.01	-0.003
0.0133	0
0.0166	-0.003
0.02	0
0.0233	-0.003
0.0266	-0.003
0.03	0
0.0333	003
0.0366	-0.003
0.04	0
0.0433	0
0.0466	0
0.05	-0.003
0.0533	-0.003
0.0566	-0.003
0.06	-0.003
0.0633	0
0.0666	-0.003
0.07	0
0.0733	0
0.0766	0
0.08	0
0.0833	-0.003
0.0866	-0.003
0.09	-0.003
0.0933	-0.003
0.0966	-0.003
0.1	-0.003
0.1033	-0.003
0.1066	-0.003
0.11	-0.003
0.1133	-0.003
0.1166	-0.003
0.12	-0.003
0.1233	-0.003
0.1266	-0.003
0.13	-0.003
0.1333	-0.003
0.1366	-0.003
0.14	-0.003
0.1433	-0.003
0.1466	-0.003
0.15	-0.003
0.1533	-0.003
0.1566	-0.003
0.16	-0.003

0.1633	-0.003
0.1666	-0.003
0.17	-0.003
0.1733	-0.003
0.1766	-0.003
0.18	-0.003
0.1833	-0.003
0.1866	-0.003
0.19	-0.003
0.1933	-0.003
0.1966	0
0.2	0
0.2033	0
0.2066	0
0.21	0
0.2133	0
0.2166	0
0.22	0
0.2233	0
0.2266	0
0.23	0
0.2333	0
0.2366	0
0.24	0
0.2433	0
0.2466	0
0.25	0
0.2533	0
0.2566	0
0.26	0
0.2633	0
0.2666	0
0.27	0
0.2733	0
0.2766	0
0.28	0
0.2833	0
0.2866	0
0.29	0
0.2933	0
0.2966	0.003
0.3	0
0.3033	0
0.3066	0
0.31	0
0.3133	0.003
0.3166	0
0.32	0
0.3233	0.003
0.3266	0.003
0.33	0.003
0.3333	0.003

0.35	0.003
0.3666	0.003
0.3833	0.003
0.4	0.003
0.4166	0.003
0.4333	0.003
0.45	0.003
0.4666	0.003
0.4833	0.003
0.5	0.003
0.5166	0.003
0.5333	0.003
0.55	0.003
0.5666	0.003
0.5833	0.003
0.6	0.003
0.6166	0.003
0.6333	0.003
0.65	0.003
0.6666	0.003
0.6833	0.003
0.7	0.003
0.7166	0.003
0.7333	0
0.75	0
0.7666	0
0.7833	0
0.8	0
0.8166	0
0.8333	0
0.85	0
0.8666	0
0.8833	0
0.9	0
0.9166	0
0.9333	0
0.95	0
0.9666	0
0.9833	0
1	0
1.2	0
1.4	0.003
1.6	0.003
1.8	0.003
2	0.003
2.2	0
2.4	-0.003
2.6	0
2.8	0
3	0
3.2	0
3.4	0

3.6	0
3.8	0
4	0.003
4.2	0
4.4	0
4.6	0
4.8	0
5	0
5.2	0
5.4	0
5.6	0
5.8	0
6	0
6.2	0
6.4	0
6.6	-0.003
6.8	0
7	0
7.2	0
7.4	0
7.6	0
7.8	0
8	0
8.2	0
8.4	0
8.6	-0.003
8.8	0
9	0
9.2	0
9.4	0
9.6	0.003
9.8	0
10	0
12	0
14	0
16	-0.009
18	-0.006
20	0
22	-0.003
24	0
26	-0.003
28	0.003
30	0.003
32	0.003
34	0
35	0
38	-0.003
40	0.003
42	0
44	0
46	0.003
48	0.003

50	0
52	0.003
54	-0.003
56	0.003
58	0.003
60	0.003
62	0.003
64	0
66	0
68	0.003
70	0.003
72	0.003
74	0.003
76	0.003
78	0.003
80	0.003
82	0.003
84	0
86	0.003
88	0.006
90	0.003
92	0.006
94	0.006
96	0.003
98	0.003
100	0.003
120	-0.003
140	0
160	-0.003
180	-0.003
200	-0.003
220	0
240	0
260	0.009
280	0.012
300	0.015
320	0.022
340	0.025
360	0.028
380	0.031
400	-0.082
420	-0.079
440	-0.076
460	-0.076
480	-0.079
500	-0.085
520	-0.082
540	-0.085
560	-0.091
580	-0.095
600	-0.098
620	-0.104

640	-0.107
660	-0.114
680	-0.117
700	-0.117
720	-0.12
740	-0.123
760	-0.123
780	-0.126
800	-0.129
820	-0.126
840	-0.126
860	-0.123
880	-0.126
900	-0.123
920	-0.123
940	-0.12
960	-0.117
980	-0.114
1000	-0.11
1060	-0.104
1120	-0.107
1180	-0.114
1240	-0.129

FIRST RECOVERY PERIOD

ELAPSED MW-1

TIME DEPTH

25	60.61
120	60.42
205	60.38
424	60.27
533	60.24
965	60.18
1392	60.16
2255	60.26
2645	60.14
3635	60.14
4090	60.02
5088	60.05
5529	59.95
6514	60.01
7062	59.94
8049	59.06
8453	59.97
9499	59.92
9977	59.88
11189	59.92
12333	60.02
13120	60.12
13920	60.1

FIRST RECOVERY PERIOD

ELAPSED MW-10

TIME DEPTH

32	60.61
127	60.44
208	60.38
440	60.3
642	60.27
974	60.23
1395	60.18
2272	60.29
2661	60.17
3651	60.16
4099	60.04
5101	60.07
5541	59.97
6525	60.02
7071	59.97
8064	60.09
8467	59.89
9494	59.95
9973	59.9
11184	59.96
12363	60.07
13148	60.12
13937	60.13

## FIRST RECOVERY PERIOD

ELAPSED MW-12

TIME DEPTH

36	61.93
133	61.69
213	61.62
449	61.63
658	61.49
979	61.42
1407	61.4
2278	61.5
2668	61.37
3658	61.37
4105	61.24
5107	61.27
5547	61.18
6	61.22
7070	61.16
8070	61.27
8473	61.18
9522	61.14
9983	61.09
11252	61.12
12367	61.25
13143	61.31
13930	61.31

FIRST RECOVERY P

ELAPSED MW-13

TIME DEPTH

461	30.57
1411	30.56
2287	30.62
2675	30.55
3664	30.59
4110	30.53
5112	30.55
5551	30.51
6534	30.55
7081	30.52
8074	30.57
8480	30.67
9517	30.53
11233	30.5
12344	30.58
13139	30.64
13904	30.61

PRE-EAST WELL TE

ELAPSED MW-16

TIME DEPTH

14385 54.26

15524 54.4

16313 54.47

17075 54.44

FIRST RECOVERY PERIOD

ELAPSED MW-3

TIME DEPTH

434	52.27
1385	52.26
2262	52.4
2650	52.28
3641	52.31
4094	52.2
5092	52.22
5533	52.15
6518	52.19
7065	52.13
8055	52.31
8458	52.21
11198	52.18
12339	52.28
13125	52.42
13915	52.43

FIRST RECOVERY PERIOD

ELAPSED MW-4

TIME DEPTH

27	56.17
122	56.06
202	56
429	55.93
637	55.9
969	55.82
1388	55.84
2265	55.95
2653	55.83
3634	55.83
4093	55.72
5095	55.74
5535	55.65
6520	55.7
7066	55.64
8056	55.77
8460	55.67
9500	55.93
9981	55.57
11195	55.62
12339	55.73
13127	55.83
13915	55.81

PRE-EAST WELL TEST

ELAPSED 43

TIME DEPTH

14320	45.94
15552	45.97
16334	45.98
17040	45.97

TWO WELL PUMP TEST

LAPSED MW-57

TIME DEPTH

-200	53.49
108	53.47
190	53.47
450	53.34
559	53.33
717	53.44
1170	53.47
1501	53.46
2525	53.48
3155	53.46

FIRST RECOVERY PERIOD

ELAPSED MW-61

TIME DEPTH

45	50.64
142	50.66
195	50.66
472	50.67
653	50.65
985	50.54
1380	50.65
2250	50.8
2638	50.86
3688	50.66
4084	50.48
5081	50.51
5521	50.52
6509	50.49
7054	50.49
8045	50.49
8446	50.51
9531	50.47
9996	50.37
11244	50.43
12322	50.5
13113	50.59
13948	50.78

**EAST WELL PUMP TEST**

## EAST WELL PUMP TEST

ELAPSED TIME	INPUT 1 MW-14	INPUT 2 WEST	INPUT 3 EAST	INPUT 4 APT1	INPUT 5 APT2	INPUT 6 BAROME
0	-0.721	5.969	-0.204	-0.446	-0.465	14.665
0.0083	-0.724	5.969	-0.204	-0.456	-0.465	14.665
0.0166	-0.721	5.969	-0.204	-0.456	-0.465	14.665
0.025	-0.721	5.969	-0.204	-0.456	-0.465	14.672
0.0333	-0.721	5.969	-0.204	-0.456	-0.465	14.67
0.0416	-0.721	5.969	-0.204	-0.456	-0.465	14.668
0.05	-0.718	5.969	-0.204	-0.456	-0.465	14.665
0.0583	-0.718	5.969	-0.204	-0.456	-0.465	14.668
0.0666	-0.715	5.969	-0.204	-0.465	-0.465	14.67
0.075	-0.718	5.969	-0.219	-0.465	-0.465	14.665
0.0833	-0.721	5.969	-0.204	-0.465	-0.475	14.672
0.0916	-0.718	5.969	-0.219	-0.465	-0.465	14.672
0.1	-0.721	5.969	-0.204	-0.465	-0.475	14.67
0.1083	-0.718	5.969	-0.219	-0.465	-0.465	14.67
0.1166	-0.718	5.969	-0.204	-0.465	-0.465	14.67
0.125	-0.718	5.969	-0.219	-0.465	-0.465	14.668
0.1333	-0.721	5.969	-0.219	-0.465	-0.465	14.67
0.1416	-0.718	5.969	-0.219	-0.465	-0.475	14.67
0.15	-0.718	5.969	-0.204	-0.465	-0.465	14.67
0.1583	-0.718	5.969	-0.204	-0.465	-0.475	14.668
0.1666	-0.718	5.969	-0.204	-0.465	-0.465	14.663
0.175	-0.724	5.969	-0.219	-0.465	-0.465	14.668
0.1833	-0.718	5.969	-0.219	-0.465	-0.475	14.665
0.1916	-0.718	5.984	-0.204	-0.465	-0.475	14.663
0.2	-0.718	5.969	-0.219	-0.465	-0.465	14.672
0.2083	-0.721	5.969	-0.204	-0.465	-0.465	14.665
0.2166	-0.721	5.969	-0.204	-0.465	-0.475	14.665
0.225	-0.718	5.984	-0.204	-0.465	-0.465	14.663
0.2333	-0.721	5.969	-0.219	-0.465	-0.475	14.668
0.2416	-0.718	5.969	-0.204	-0.465	-0.465	14.668
0.25	-0.721	5.969	-0.204	-0.465	-0.475	14.665
0.2583	-0.718	5.969	-0.204	-0.465	-0.465	14.67
0.2666	-0.721	5.969	-0.204	-0.465	-0.475	14.668
0.275	-0.718	5.969	-0.204	-0.475	-0.465	14.668
0.2833	-0.721	5.969	-0.204	-0.465	-0.465	14.672
0.2916	-0.721	5.969	-0.204	-0.465	-0.465	14.668

0.3	-0.718	5.969	-0.204	-0.465	-0.465	14.665
0.3083	-0.721	5.969	-0.204	-0.465	-0.465	14.668
0.3166	-0.721	5.984	-0.204	-0.465	-0.465	14.672
0.325	-0.721	5.969	-0.204	-0.465	-0.465	14.67
0.3333	-0.718	5.969	-0.204	-0.465	-0.475	14.67
0.35	-0.721	5.969	-0.204	-0.465	-0.475	14.672
0.3666	-0.721	5.969	-0.204	-0.465	-0.465	14.668
0.3833	-0.721	5.969	-0.204	-0.465	-0.475	14.672
0.4	-0.721	5.969	-0.204	-0.465	-0.475	14.665
0.4166	-0.718	5.969	-0.204	-0.465	-0.475	14.663
0.4333	-0.721	5.969	-0.204	-0.465	-0.465	14.665
0.45	-0.715	5.969	-0.204	-0.465	-0.465	14.67
0.4666	-0.721	5.969	-0.204	-0.465	-0.475	14.67
0.4833	-0.721	5.969	-0.204	-0.475	-0.465	14.672
0.5	-0.721	5.969	-0.204	-0.465	-0.465	14.665
0.5166	-0.715	5.969	21.837	-0.465	-0.465	14.672
0.5333	-0.718	5.969	6.36	-0.475	-0.465	14.67
0.55	-0.715	5.969	8.245	-0.475	-0.465	14.67
0.5666	-0.718	5.969	9.785	-0.475	-0.465	14.663
0.5833	-0.718	5.953	11.811	-0.484	-0.465	14.674
0.6	-0.718	5.953	12.958	-0.484	-0.465	14.674
0.6166	-0.718	5.937	14.2	-0.494	-0.465	14.674
0.6333	-0.721	5.937	15.347	-0.494	-0.475	14.674
0.65	-0.721	5.906	16.054	-0.503	-0.475	14.665
0.6666	-0.721	5.906	16.855	-0.513	-0.475	14.668
0.6833	-0.718	5.906	17.436	-0.513	-0.475	14.67
0.7	-0.718	5.906	17.766	-0.513	-0.475	14.663
0.7166	-0.721	5.937	17.908	-0.522	-0.484	14.67
0.7333	-0.718	5.969	18.018	-0.522	-0.475	14.668
0.75	-0.718	6	18.426	-0.522	-0.475	14.663
0.7666	-0.718	6.016	18.395	-0.522	-0.484	14.67
0.7833	-0.721	6.016	18.269	-0.522	-0.484	14.663
0.8	-0.718	6.016	18.316	-0.532	-0.484	14.668
0.8166	-0.721	6	18.442	-0.532	-0.494	14.67
0.8333	-0.718	5.969	18.442	-0.532	-0.494	14.67
0.85	-0.718	5.969	18.065	-0.532	-0.494	14.674
0.8666	-0.718	5.969	17.955	-0.532	-0.494	14.674
0.8833	-0.718	5.969	17.122	-0.522	-0.503	14.661
0.9	-0.718	5.969	17.436	-0.522	-0.503	14.668
0.9166	-0.718	5.969	17.672	-0.522	-0.503	14.665

0.9333	-0.715	5.969	17.593	-0.522	-0.503	14.67
0.95	-0.715	5.969	17.641	-0.522	-0.503	14.67
0.9666	-0.718	5.969	17.735	-0.522	-0.503	14.67
0.9833	-0.718	5.969	17.735	-0.522	-0.513	14.67
1	-0.718	5.969	17.923	-0.522	-0.513	14.67
1.2	-0.718	5.937	17.515	-0.494	-0.513	14.672
1.4	-0.715	5.466	16.494	-0.456	-0.513	14.67
1.6	-0.718	5.073	16.085	-0.427	-0.494	14.672
1.8	-0.721	4.838	16.132	-0.408	-0.475	14.665
2	-0.718	4.728	16.336	-0.38	-0.456	14.679
2.2	-0.715	4.681	16.211	-0.361	-0.446	14.665
2.4	-0.721	4.634	16.274	-0.342	-0.427	14.665
2.6	-0.718	4.618	16.305	-0.323	-0.408	14.665
2.8	-0.718	4.555	16.368	-0.304	-0.399	14.665
3	-0.712	4.555	16.352	-0.285	-0.37	14.67
3.2	-0.712	4.571	16.242	-0.256	-0.361	14.668
3.4	-0.712	4.586	16.588	-0.237	-0.342	14.665
3.6	-0.709	4.602	16.415	-0.228	-0.323	14.663
3.8	-0.706	4.571	16.462	-0.209	-0.304	14.663
4	-0.706	4.539	16.509	-0.19	-0.294	14.67
4.2	-0.706	4.555	16.556	-0.171	-0.275	14.663
4.4	-0.702	4.586	16.478	-0.171	-0.266	14.663
4.6	-0.702	4.586	16.541	-0.152	-0.256	14.67
4.8	-0.696	4.508	16.415	-0.142	-0.237	14.67
5	-0.696	4.555	16.572	-0.123	-0.228	14.67
5.2	-0.696	4.571	16.698	-0.114	-0.209	14.665
5.4	-0.693	4.618	16.572	-0.104	-0.199	14.672
5.6	-0.687	4.618	16.682	-0.095	-0.19	14.668
5.8	-0.687	4.586	16.635	-0.085	-0.18	14.668
6	-0.681	4.555	16.604	-0.076	-0.171	14.672
6.2	-0.674	4.602	16.635	-0.066	-0.161	14.672
6.4	-0.671	4.634	16.541	-0.057	-0.152	14.67
6.6	-0.668	4.634	16.604	-0.038	-0.142	14.665
6.8	-0.662	4.681	16.666	-0.028	-0.123	14.663
7	-0.662	4.665	16.682	-0.019	-0.114	14.668
7.2	-0.659	4.634	16.635	-0.009	-0.104	14.668
7.4	-0.659	4.649	16.682	-0.009	-0.104	14.672
7.6	-0.656	4.649	16.651	-0.009	-0.104	14.672
7.8	-0.656	4.602	16.682	0	-0.095	14.676
8	-0.656	4.618	16.666	0.009	-0.085	14.67

8.2	-0.649	4.665	16.745	0.019	-0.076	14.67
8.4	-0.643	4.665	16.556	0.028	-0.066	14.665
8.6	-0.64	4.681	16.682	0.028	-0.057	14.668
8.8	-0.637	4.634	16.714	0.038	-0.047	14.668
9	-0.634	4.634	16.698	0.047	-0.038	14.67
9.2	-0.631	4.649	16.792	0.057	-0.038	14.665
9.4	-0.627	4.681	16.682	0.066	-0.028	14.665
9.6	-0.624	4.681	16.588	0.076	-0.019	14.672
9.8	-0.621	4.696	16.855	0.085	-0.009	14.665
10	-0.615	4.681	16.745	0.085	-0.009	14.665
12	-0.584	4.728	16.855	0.142	0.047	14.668
14	-0.552	4.775	16.934	0.19	0.095	14.661
16	-0.531	4.791	16.886	0.247	0.152	14.661
18	-0.509	4.853	16.886	0.275	0.171	14.67
20	-0.484	4.885	16.934	0.323	0.218	14.674
22	-0.459	4.869	16.934	0.351	0.256	14.665
24	-0.443	4.901	17.012	0.38	0.275	14.67
26	-0.418	4.901	17.059	0.399	0.304	14.661
28	-0.406	4.948	17.059	0.427	0.332	14.672
30	-0.374	4.979	17.028	0.456	0.351	14.665
32	-0.371	4.963	17.075	0.484	0.37	14.672
34	-0.356	5.042	17.106	0.494	0.38	14.659
36	-0.349	5.026	17.138	0.513	0.408	14.663
38	-0.331	5.042	17.216	0.532	0.418	14.661
40	-0.321	5.089	17.122	0.532	0.437	14.67
42	-0.309	5.073	17.185	0.56	0.446	14.661
44	-0.299	5.089	17.185	0.57	0.465	14.663
46	-0.293	5.136	17.138	0.579	0.465	14.659
48	-0.278	5.12	17.248	0.598	0.484	14.663
50	-0.268	5.136	17.154	0.617	0.494	14.654
52	-0.259	5.152	17.295	0.617	0.503	14.659
54	-0.253	5.183	17.216	0.636	0.52	14.661
56	-0.243	5.183	17.185	0.646	0.532	14.654
58	-0.237	5.183	17.232	0.655	0.541	14.663
60	-0.228	5.199	17.373	0.655	0.541	14.665
62	-0.221	5.199	17.232	0.655	0.551	14.661
64	-0.221	5.199	17.295	0.675	0.551	14.659
66	-0.215	5.199	17.373	0.684	0.56	14.654
68	-0.206	5.246	17.326	0.684	0.57	14.661
70	-0.199	5.23	17.452	0.694	0.579	14.659

72	-0.193	5.246	17.405	0.703	0.579	14.659
74	-0.19	5.246	17.373	0.703	0.589	14.657
76	-0.187	5.23	17.295	0.713	0.589	14.654
78	-0.181	5.23	17.342	0.713	0.589	14.657
80	-0.174	5.262	17.531	0.732	0.608	14.654
82	-0.171	5.23	17.326	0.732	0.608	14.663
84	-0.171	5.278	17.295	0.732	0.608	14.665
86	-0.165	5.278	17.358	0.741	0.617	14.652
88	-0.156	5.293	17.311	0.741	0.617	14.657
90	-0.159	5.262	17.358	0.741	0.617	14.654
92	-0.153	5.309	17.279	0.751	0.627	14.652
94	-0.143	5.278	17.389	0.751	0.627	14.65
96	-0.146	5.278	17.358	0.76	0.627	14.65
98	-0.143	5.278	17.421	0.76	0.636	14.659
100	-0.143	5.309	17.421	0.76	0.636	14.657
120	-0.115	5.325	17.405	0.808	0.665	14.659
140	-0.099	5.356	17.515	0.827	0.684	14.654
160	-0.09	5.325	17.515	0.846	0.703	14.648
180	-0.081	5.372	17.499	0.855	0.712	14.657
200	-0.071	5.372	17.546	0.874	0.722	14.657
220	-0.071	5.387	17.515	0.874	0.731	14.661
240	-0.065	5.403	17.562	0.884	0.731	14.652
260	-0.068	5.372	17.483	0.884	0.741	14.661
280	-0.065	5.387	17.531	0.884	0.741	14.661
300	-0.062	5.387	17.421	0.893	0.741	14.663
320	-0.062	5.372	17.468	0.893	0.75	14.621
340	-0.059	5.387	17.531	0.903	0.75	14.623
360	-0.056	5.372	17.499	0.903	0.75	14.626
380	-0.046	5.387	17.625	0.912	0.798	14.63
400	-0.04	5.419	17.546	0.922	0.779	14.632
420	-0.034	5.435	17.531	0.931	0.779	14.637
440	-0.024	5.403	17.641	0.931	0.788	14.637
460	-0.021	5.419	17.656	0.941	0.788	14.639
480	-0.018	5.419	17.593	0.941	0.798	14.639
500	-0.012	5.466	17.593	0.941	0.798	14.639
520	-0.009	5.419	17.578	0.941	0.798	14.637
540	-0.012	5.435	17.562	0.941	0.798	14.634
560	-0.012	5.435	17.609	0.941	0.798	14.634
580	-0.012	5.45	17.593	0.941	0.788	14.634
600	-0.009	5.419	17.593	0.941	0.798	14.632

620	-0.012	5.419	17.546	0.941	0.798	14.63
640	-0.012	5.403	17.515	0.931	0.788	14.63
660	-0.009	5.419	17.609	0.931	0.788	14.626
680	-0.009	5.403	17.468	0.931	0.788	14.623
700	-0.006	5.403	17.625	0.922	0.777	14.621
720	-0.009	5.419	17.546	0.922	0.777	14.619
740	-0.015	5.387	17.531	0.922	0.769	14.617
760	-0.018	5.387	17.546	0.912	0.769	14.617
780	-0.018	5.372	17.515	0.912	0.769	14.615
800	-0.021	5.387	17.515	0.912	0.76	14.612
820	-0.028	5.403	17.515	0.903	0.76	14.61
840	-0.024	5.387	17.641	0.912	0.76	14.61
860	-0.024	5.356	17.531	0.912	0.76	14.61
880	-0.021	5.387	17.468	0.912	0.76	14.61
900	-0.021	5.403	17.641	0.912	0.76	14.61
920	-0.028	5.387	17.452	0.912	0.76	14.61
940	-0.021	5.372	17.531	0.912	0.76	14.612
960	-0.018	5.403	17.405	0.912	0.769	14.615
980	-0.015	5.419	17.531	0.922	0.769	14.617
1000	-0.012	5.419	17.483	0.922	0.779	14.617
1060	-0.009	5.403	17.609	0.931	0.788	14.641
1120	0.003	5.419	17.593	0.96	0.807	14.65
1180	0.024	5.435	17.515	0.979	0.836	14.668
1240	0.037	5.45	17.499	0.988	0.845	14.663
1300	0.037	5.435	17.531	0.988	0.845	14.659
1360	0.034	5.435	17.593	0.979	0.836	14.663
1420	0.024	5.435	17.609	0.96	0.826	14.648
1480	0.009	5.403	17.531	0.95	0.807	14.641
1540	-0.006	5.387	17.562	0.941	0.798	14.632
1600	-0.021	5.372	17.593	0.922	0.779	14.641
1660	-0.028	5.387	17.515	0.922	0.779	14.634
1720	-0.037	5.372	17.483	0.922	0.779	14.637
1780	-0.031	5.387	17.483	0.922	0.788	14.601
1840	-0.018	5.372	17.672	0.931	0.788	14.601
1900	0	5.372	17.625	0.941	0.798	14.603
1960	0	5.403	17.609	0.941	0.798	14.603
2020	0	5.372	17.483	0.941	0.798	14.599
2080	0	5.356	17.499	0.931	0.788	14.595
2140	0	5.372	17.483	0.922	0.788	14.592
2200	-0.003	5.34	17.609	0.931	0.788	14.595

2260	-0.006	5.372	17.483	0.922	0.779	14.59
2320	-0.012	5.372	17.593	0.922	0.779	14.588
2380	-0.012	5.356	17.389	0.931	0.788	14.592
2440	0	5.387	17.389	0.931	0.788	14.595
2500	0.009	5.387	17.562	0.95	0.807	14.63
2560	0.009	5.403	17.593	0.969	0.817	14.634
2620	0.021	5.435	17.499	0.979	0.836	14.639
2680	0.034	5.435	17.483	0.988	0.836	14.637
2740	0.031	5.419	17.625	0.988	0.836	14.637
280	0.028	5.403	17.562	0.979	0.836	14.634
2860	0.018	5.403	17.499	0.969	0.826	14.628
2920	0.009	5.387	17.499	0.96	0.807	14.63
2980	-0.003	5.34	17.531	0.941	0.798	14.617
3040	-0.018	5.356	17.515	0.931	0.788	14.612
3100	-0.021	5.34	17.499	0.941	0.788	14.617
3160	-0.021	5.387	17.515	0.941	0.798	14.612
3220	-0.012	5.356	17.562	0.95	0.807	14.586
3280	0.006	5.387	17.609	0.96	0.817	14.59
3340	0.018	5.403	17.515	0.96	0.826	14.592
3400	0.028	5.387	17.562	0.969	0.826	14.595
3460	0.024	5.403	17.531	0.969	0.826	14.59
3520	0.015	5.387	17.483	0.969	0.817	14.584
3580	0.009	5.387	17.609	0.95	0.807	14.579
3640	-0.003	5.356	17.578	0.95	0.798	14.575
3700	-0.018	5.356	17.546	0.931	0.788	14.568
3760	-0.018	5.372	17.515	0.931	0.788	14.57
3820	-0.012	5.34	17.641	0.941	0.788	14.573
3880	-0.006	5.325	17.515	0.941	0.798	14.577
3940	0.012	5.372	17.483	0.96	0.817	14.6
4000	0.024	5.356	17.578	0.979	0.826	14.5
4060	0.034	5.403	17.499	0.988	0.845	14.61
4120	0.043	5.403	17.593	0.998	0.855	14.612
4180	0.049	5.403	17.578	0.998	0.855	14.61
4240	0.024	5.387	17.578	0.979	0.845	14.608
4300	0.009	5.372	17.515	0.96	0.826	14.599
4360	-0.021	5.356	17.452	0.941	0.798	14.584
4420	-0.031	5.34	17.421	0.931	0.788	14.588
4480	-0.04	5.309	17.436	0.931	0.788	14.584
4540	-0.043	5.325	17.326	0.931	0.788	14.581
4600	-0.043	5.293	17.499	0.931	0.788	14.584

4660	-0.028	5.325	17.483	0.941	0.807	14.573
4720	-0.003	5.356	17.625	0.969	0.826	14.581
4780	0.009	5.372	17.531	0.988	0.845	14.584
4840	0.031	5.387	17.719	1.007	0.864	14.592
4900	0.043	5.387	17.656	1.017	0.874	14.595
4960	0.046	5.419	17.531	1.026	0.874	14.599
5020	0.059	5.419	17.751	1.036	0.893	14.612
5080	0.071	5.435	17.578	1.055	0.902	14.617
5140	0.071	5.45	17.766	1.045	0.902	14.619
5200	0.078	5.419	17.625	1.055	0.902	14.623
5260	0.074	5.45	17.656	1.055	0.902	14.628
5320	0.084	5.435	17.719	1.064	0.921	14.634
5380	0.096	5.466	17.641	1.083	0.931	14.659
5440	0.099	5.466	17.641	1.083	0.931	14.661
5500	0.112	5.482	17.578	1.083	0.94	14.674
5560	0.118	5.435	17.703	1.093	0.94	14.683
5620	0.106	5.45	17.609	1.083	0.94	14.672
5680	0.084	5.45	17.531	1.074	0.931	14.676
5740	0.056	5.403	17.578	1.045	0.902	14.657
5800	0.028	5.403	17.609	1.026	0.874	14.648
5860	0	5.372	17.766	1.017	0.864	14.641
5920	-0.024	5.34	17.578	0.998	0.845	14.643
5980	-0.034	5.356	17.515	0.988	0.845	14.645
6040	-0.037	5.356	17.735	0.988	0.845	14.637
6100	-0.031	5.372	17.562	1.007	0.855	14.619
6160	-0.009	5.372	17.656	1.026	0.874	14.628
6220	0.006	5.403	17.688	1.036	0.883	14.632
6280	0.021	5.403	17.703	1.055	0.893	14.634
6340	0.024	5.403	17.641	1.045	0.893	14.63
6400	0.021	5.387	17.641	1.045	0.883	14.63
6460	0.031	5.419	17.656	1.036	0.883	14.628
6520	0.021	5.403	17.641	1.036		14.626
6580	0.018	5.387	17.735	1.036		14.628
6640	0.018	5.387	17.703	1.036		14.63
6700	0.018	5.419	17.625	1.036	0.883	14.637
6760	0.028	5.403	17.688	1.055	0.883	14.645
6820	0.04	5.403	17.719	1.064	0.912	14.672

## EAST WELL PUMP T

ELAPSED INPUT 1

TIME MW-6

0	-0.11
0.0033	-0.11
0.0066	-0.11
0.01	-0.11
0.0133	-0.11
0.0166	-0.11
0.02	-0.11
0.0233	-0.11
0.0266	-0.11
0.03	-0.11
0.0333	-0.11
0.05	-0.11
0.0666	-0.094
0.0833	-0.094
0.1	-0.11
0.1166	-0.11
0.1333	-0.11
0.15	-0.11
0.1666	-0.094
0.1833	-0.11
0.2	-0.11
0.2166	-0.11
0.2333	-0.11
0.25	-0.11
0.2666	-0.11
0.2833	-0.11
0.3	-0.11
0.3166	-0.11
0.3333	-0.11
0.4166	-0.11
0.5	-0.11
0.5833	-0.11
0.6666	-0.11
0.75	-0.11
0.8333	-0.11
0.9166	-0.11

1	-0.11
1.0833	-0.11
1.1666	-0.11
1.25	-0.11
1.3333	-0.11
1.4166	-0.11
1.5	-0.11
1.5833	-0.11
1.6666	-0.11
1.75	-0.11
1.8333	-0.11
1.9166	-0.11
2	-0.11
2.5	-0.11
3	-0.11
3.5	-0.11
4	-0.11
4.5	-0.11
5	-0.11
5.5	-0.11
6	-0.11
6.5	-0.11
7	-0.11
7.5	-0.11
8	-0.11
8.5	-0.094
9	-0.11
9.5	-0.11
10	-0.094
12	-0.078
14	-0.078
16	-0.078
18	-0.063
20	-0.047
22	-0.047
24	-0.031
26	-0.031
28	-0.015
30	-0.015
32	-0.015

34	0
36	0
38	0.015
40	0.015
42	0.015
44	0.031
46	0.031
48	0.031
50	0.047
52	0.047
54	0.047
56	0.047
58	0.063
60	0.078
62	0.078
64	0.078
66	0.078
68	0.078
70	0.078
72	0.078
74	0.094
76	0.094
78	0.094
80	0.094
82	0.094
84	0.094
86	0.11
88	0.11
90	0.11
92	0.11
94	0.11
96	0.11
98	0.11
100	0.126
110	0.126
120	0.142
130	0.142
140	0.142
150	0.157
160	0.157

170	0.157
180	0.173
190	0.173
200	0.173
210	0.173
220	0.173
230	0.173
240	0.173
250	0.173
260	0.189
270	0.189
280	0.173
290	0.173
300	0.189
310	0.189
320	0.189
330	0.189
340	0.189
350	0.189
360	0.189
370	0.189
380	0.189
390	0.205
400	0.205
410	0.205
420	0.205
430	0.205
440	0.22
450	0.22
460	0.22
470	0.22
480	0.22
490	0.22
500	0.22
510	0.22
520	0.22
530	0.22
540	0.22
550	0.22
560	0.22

570	0.22
580	0.22
590	0.22
600	0.22
610	0.22
620	0.22
630	0.22
-	0.22
650	0.205
660	0.205
670	0.205
680	0.205
690	0.205
700	0.205
710	0.205
720	0.205
730	0.189
740	0.189
750	0.189
760	0.189
-	0.189
-	0.189
790	0.189
800	0.189
810	0.189
820	0.189
830	0.189
840	0.173
850	0.189
860	0.173
870	0.189
880	0.189
890	0.189
900	0.189
910	0.189
920	0.189
930	0.189
940	0.189
950	0.189
960	0.189

970	0.189
980	0.205
990	0.205
1000	0.205
1060	0.205
1120	0.236
1180	0.252
1240	0.268
1300	0.252
1360	0.252
1420	0.236
1480	0.205
1540	0.205
1600	0.173
1660	0.173
1720	0.173
1780	0.173
1840	0.173
1900	0.189
1960	0.189
2020	0.189
2080	0.189
2140	0.173
2200	0.173
2260	0.173
2320	0.173
2380	0.173
2440	0.189
2500	0.189
2560	0.205
2620	0.22
2680	0.22
2740	0.236
2800	0.22
2860	0.205
2920	0.189
2980	0.189
3040	0.173
3100	0.173
3160	0.173

3220	0.189
3280	0.205
3340	0.205
3400	0.22
~	0.205
3500	0.189
3580	0.39
3640	0.189
3700	0.173
3760	0.173
3820	0.173
3880	0.189
3940	0.205
4000	0.22
4060	0.236
4120	0.236
4180	0.252
4240	0.236
4300	0.22
4360	0.189
4420	0.173
4480	0.157
4540	0.157
4600	0.157
4660	0.157
4720	0.157
4780	0.205
4840	0.236
4900	0.236
4960	0.236
5020	0.252
5080	0.268
5140	0.268
5200	0.268
5260	0.268
5320	0.284
5380	0.284
5440	0.299
5500	0.299
5560	0.315

5620	0.315
5680	0.315
5740	0.284
5800	0.252
5860	0.236
5920	0.22
5980	0.205
6040	0.189
6100	0.189
6160	0.205
6220	0.22
6280	0.22
6340	0.22
6400	0.22
6460	0.22
6520	0.205
6580	0.22
6640	0.205
6700	0.22
6760	0.22
6820	0.236
6880	0.268

## EAST WELL PUMP TES

ELAPSED INPUT 1

TIME MW-58

0	-0.161
0.0033	-0.161
0.0066	-0.164
0.01	-0.161
0.0133	-0.161
0.0166	-0.164
0.02	-0.161
0.0233	-0.161
0.0266	-0.164
0.03	-0.164
0.0333	-0.161
0.0366	-0.161
0.04	-0.161
0.0433	-0.161
0.0466	-0.161
0.05	-0.161
0.0533	-0.161
0.0566	-0.161
0.06	-0.161
0.0633	-0.161
0.0666	-0.161
0.07	-0.161
0.0733	-0.161
0.0766	-0.164
0.08	-0.161
0.0833	-0.164
0.0866	-0.161
0.09	-0.161
0.0933	-0.164
0.0966	-0.161
0.1	-0.161
0.1033	-0.164
0.1066	-0.161
0.11	-0.164
0.1133	-0.164
0.1166	-0.164
0.12	-0.164
0.1233	-0.164
0.1266	-0.164
0.13	-0.164
0.1333	-0.164
0.1366	-0.164
0.14	-0.164
0.1433	-0.164
0.1466	-0.164
0.15	-0.164
0.1533	-0.164

0.1566	-0.164
0.16	-0.164
0.1633	-0.164
0.1666	-0.164
0.17	-0.164
0.1733	-0.164
0.1766	-0.164
0.18	-0.164
0.1833	-0.161
0.1866	-0.161
0.19	-0.164
0.1933	-0.161
0.1966	-0.161
0.2	-0.161
0.2033	-0.161
0.2066	-0.161
0.21	-0.161
0.2133	-0.161
0.2166	-0.161
0.22	-0.161
0.2233	-0.161
0.2266	-0.161
0.23	-0.161
0.2333	-0.161
0.2366	-0.161
0.24	-0.161
0.2433	-0.161
0.2466	-0.161
0.25	-0.161
0.2533	-0.161
0.2566	-0.161
0.26	-0.161
0.2633	-0.161
0.2666	-0.161
0.27	-0.161
0.2733	-0.161
0.2766	-0.161
0.28	-0.161
0.2833	-0.161
0.2866	-0.161
0.29	-0.161
0.2933	-0.161
0.2966	-0.161
0.3	-0.161
0.3033	-0.161
0.3066	-0.161
0.31	-0.161
0.3133	-0.161
0.3166	-0.161
0.32	-0.161

0.3233	-0.161
0.3266	-0.161
0.33	-0.161
0.3333	-0.161
0.35	-0.161
0.3666	-0.161
0.3833	-0.161
0.4	-0.161
0.4166	-0.161
0.4333	-0.161
0.45	-0.161
0.4666	-0.161
0.4833	-0.161
0.5	-0.161
0.5166	-0.158
0.5333	-0.161
0.55	-0.158
0.5666	-0.161
0.5833	-0.161
0.6	-0.161
0.6166	-0.161
0.6333	-0.161
0.65	-0.161
0.6666	-0.161
0.6833	-0.161
0.7	-0.161
0.7166	-0.158
0.7333	-0.161
0.75	-0.158
0.7666	-0.158
0.7833	-0.158
0.8	-0.158
0.8166	-0.158
0.8333	-0.158
0.85	-0.158
0.8666	-0.158
0.8833	-0.158
0.9	-0.158
0.9166	-0.158
0.9333	-0.158
0.95	-0.158
0.9666	-0.158
0.9833	-0.158
1	-0.158
1.2	-0.161
1.4	-0.158
1.6	-0.158
1.8	-0.158
2	-0.161
2.2	-0.161

2.4	-0.161
2.6	-0.155
2.8	-0.152
3	-0.145
3.2	-0.142
3.4	-0.139
3.6	-0.136
3.8	-0.129
4	-0.126
4.2	-0.123
4.4	-0.117
4.6	-0.11
4.8	-0.107
5	-0.104
5.2	-0.098
5.4	-0.095
5.6	-0.088
5.8	-0.085
6	-0.082
6.2	-0.076
6.4	-0.072
6.6	-0.069
6.8	-0.063
7	-0.053
7.2	-0.05
7.4	-0.044
7.6	-0.044
7.8	-0.034
8	-0.031
8.2	-0.028
8.4	-0.025
8.6	-0.022
8.8	-0.019
9	-0.009
9.2	-0.006
9.4	-0.003
9.6	0.003
9.8	0.003
10	0.009
12	0.053
14	0.091
16	0.129
18	0.161
20	0.186
22	0.212
24	0.24
26	0.256
28	0.278
30	0.3
32	0.313

34	0.329
36	0.345
38	0.361
40	0.367
42	0.383
44	0.396
46	0.405
48	0.415
50	0.415
52	0.427
54	0.434
56	0.443
58	0.446
60	0.453
62	0.462
64	0.465
66	0.475
68	0.478
70	0.484
72	0.494
74	0.5
76	0.5
78	0.503
80	0.506
82	0.516
84	0.516
86	0.519
88	0.522
90	0.525
92	0.525
94	0.532
96	0.532
98	0.538
100	0.541
120	0.563
140	0.582
160	0.595
180	0.601
200	0.617
220	0.617
24	0.627
260	0.633
280	0.636
300	0.643
320	0.643
340	0.646
360	0.652
380	0.658
400	0.665
420	0.674

440	0.677
460	0.681
480	0.684
500	0.687
520	0.687
540	0.684
560	0.684
580	0.681
600	0.681
620	0.677
640	0.677
660	0.674
680	0.668
700	0.665
720	0.662
740	0.652
760	0.655
780	0.652
800	0.649
820	0.646
840	0.646
860	0.643
880	0.646
900	0.646
920	0.646
940	0.649
960	0.652
980	0.658
1000	0.662
1060	0.674
1120	0.69
1180	0.709
1240	0.722
1300	0.725
1360	0.719
1420	0.693
1480	0.687
1540	0.671
1600	0.658
1660	0.652
1720	0.655
1780	0.658
1840	0.665
1900	0.671
1960	0.674
2020	0.668
2080	0.665
2140	0.658
2200	0.662
2260	0.658

2320	0.655
2380	0.658
2440	0.668
2500	0.681
2560	0.696
2620	0.709
2680	0.715
2740	0.712
2800	0.709
2860	0.703
2920	0.684
2980	0.671
3040	0.662
3100	0.668
3160	0.668
3220	0.674
3280	0.69
3340	0.696
3400	0.706
3460	0.7
3520	0.693
3580	0.684
3640	0.674
3700	0.658
3760	0.658
3820	0.665
3880	0.668
3940	0.693
4000	0.703
4060	0.715
4120	0.728
4180	0.731
4240	0.715
4300	0.696
4360	0.671
4420	0.662
4480	0.658
4540	0.658
4600	0.662
4660	0.681
4720	0.7
4780	0.712
4840	0.734
4900	0.741
4960	0.747
5020	0.76
5080	0.776
5140	0.776
5200	0.779
5260	0.779

5320	0.788
5380	0.798
5440	0.804
5500	0.811
5560	0.817
5620	0.811
5680	0.804
5740	0.779
5800	0.753
5860	0.731
5920	0.719
5980	0.719
6040	0.715
6100	0.722
6160	0.734
6220	0.75
6280	0.763
6340	0.76
6400	0.75
6460	0.75
6520	0.744
6580	0.744
6640	0.744
6700	0.75
6760	0.757
6820	0.776
6880	0.792

EAST WELL PUMP TES

ELAPSED MW-1

TIME DEPTH

22	60.1
103	60.17
142	60.19
261	60.23
419	60.26
539	60.29
662	60.28
736	60.26
898	60.24
1004	60.24
1220	60.32
1560	60.26
1971	60.27
2419	60.26
3322	60.27
4181	60.31
4580	60.23
5536	60.39
6128	60.31
6874	60.38

## EAST WELL PUMP T

ELAPSED MW-10

TIME DEPTH

49	60.14
117	60.21
146	60.22
249	60.26
407	60.28
573	60.32
639	60.31
727	60.29
895	60.28
998	60.28
1214	60.35
1581	60.28
1966	60.3
2515	60.3
3308	60.3
4176	60.35
4574	60.26
5557	60.42
6124	60.35
6868	60.41

## EAST WELL PUMP T

ELAPSED MW-12

TIME DEPTH

43	61.36
95	61.45
166	61.5
293	61.53
435	61.57
525	61.57
644	61.57
733	61.54
908	61.53
1027	61.56
1208	61.63
1598	61.56
1989	61.56
2511	61.58
3342	61.6
4187	61.62
4600	61.56
5480	61.72
6145	61.60
6892	61.7

EAST WELL PUMP T

ELAPSED MW-13

TIME DEPTH

87	30.58
163	30.57
288	30.59
430	30.61
521	30.59
672	30.57
750	30.57
918	30.56
1024	30.6
1203	30.61
1605	30.56
1986	30.56
2506	30.58
3333	30.58
4193	30.55
4593	30.54
5546	30.61
6141	30.57
6888	30.63

EAST WELL PUMP T

ELAPSED MW-16

TIME DEPTH

70	54.36
121	54.37
266	54.39
403	54.44
569	54.44
670	54.43
746	54.41
914	54.42
1035	54.44
1232	54.48
1588	54.41
1979	54.41
2532	54.45
3327	54.46
4188	54.49
4590	54.43
5137	54.51
5542	54.59
6885	54.58

EAST WELL PUMP T

ELAPSED MW-3

TIME DEPTH

28	52.37
108	52.34
136	52.33
254	52.32
412	52.34
562	52.35
664	52.33
739	52.29
908	52.27
1012	52.28
1226	52.32
1572	52.25
1973	52.24
2524	52.24
3314	52.25
4183	52.26
4585	52.19
5532	52.38
6130	52.28
6878	52.34

EAST WELL PUMP T

ELAPSED MW-4

TIME DEPTH

30	55.78
110	55.84
138	55.84
256	55.87
414	55.89
564	55.91
666	55.9
741	55.87
903	55.86
1006	55.86
1224	55.94
1575	55.88
1975	55.87
2523	55.88
3317	55.89
4185	55.92
4583	55.85
5529	56.02
6130	55.92
6877	55.97

EAST WELL PUMP T

ELAPSED MW-43

TIME DEPTH

22	45.96
173	45.97
514	45.97
924	45.97
1042	45.97
1608	45.97
1993	45.97
2478	45.97
3293	45.97
4201	45.98
4556	45.66
5509	45.96
5152	45.97
6845	45.96

EAST WELL PUMP T

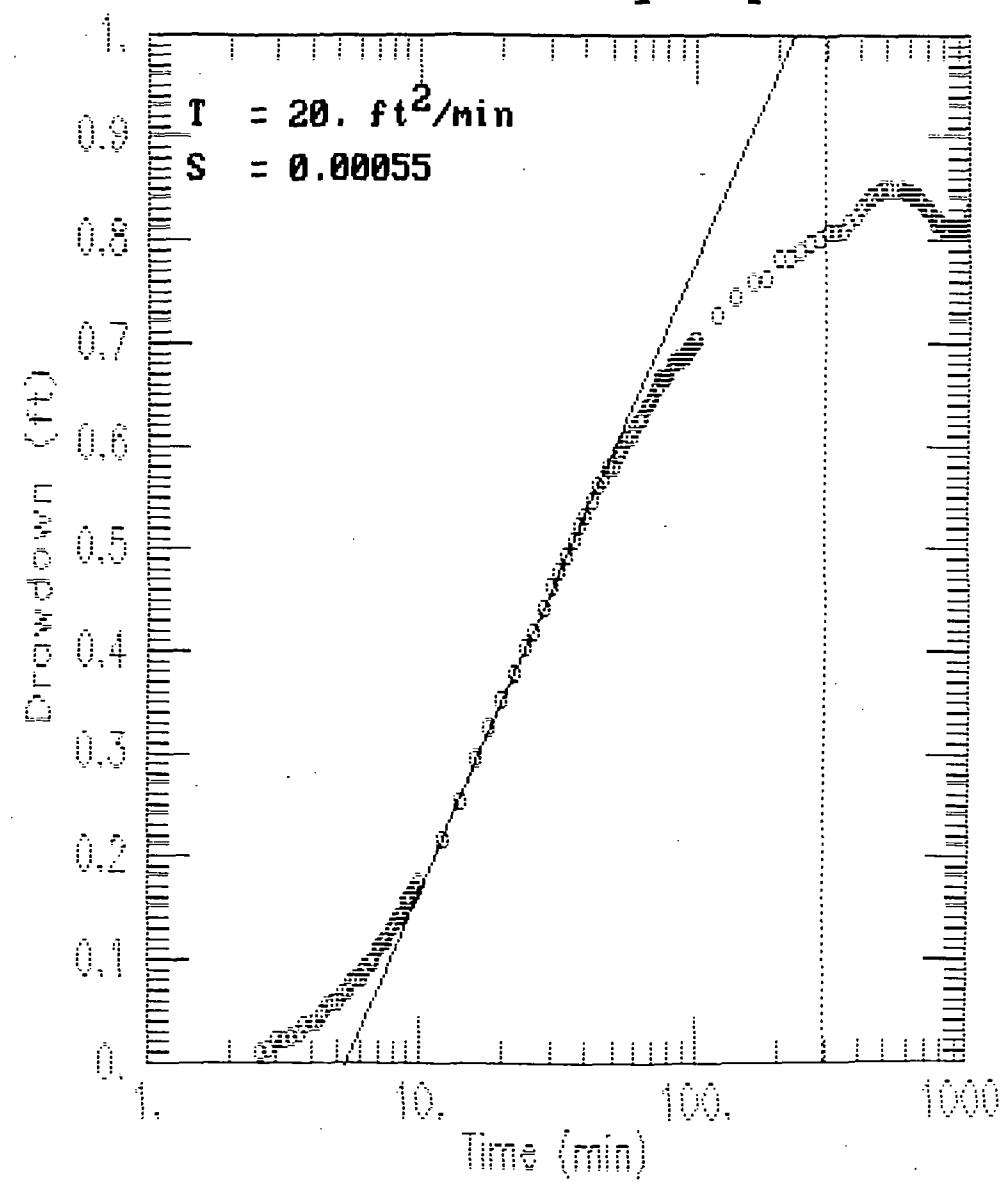
ELAPSED MW-61

TIME DEPTH

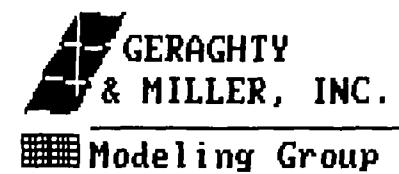
78	50.68
154	50.65
242	50.65
400	50.68
531	50.67
629	50.65
721	50.62
890	50.68
960	50.6
1616	50.62
1960	50.53
2497	50.53
3300	50.54
4171	50.6
4566	50.44
5515	50.74
6118	50.99
6855	50.69

## **SECOND RECOVERY PERIOD**

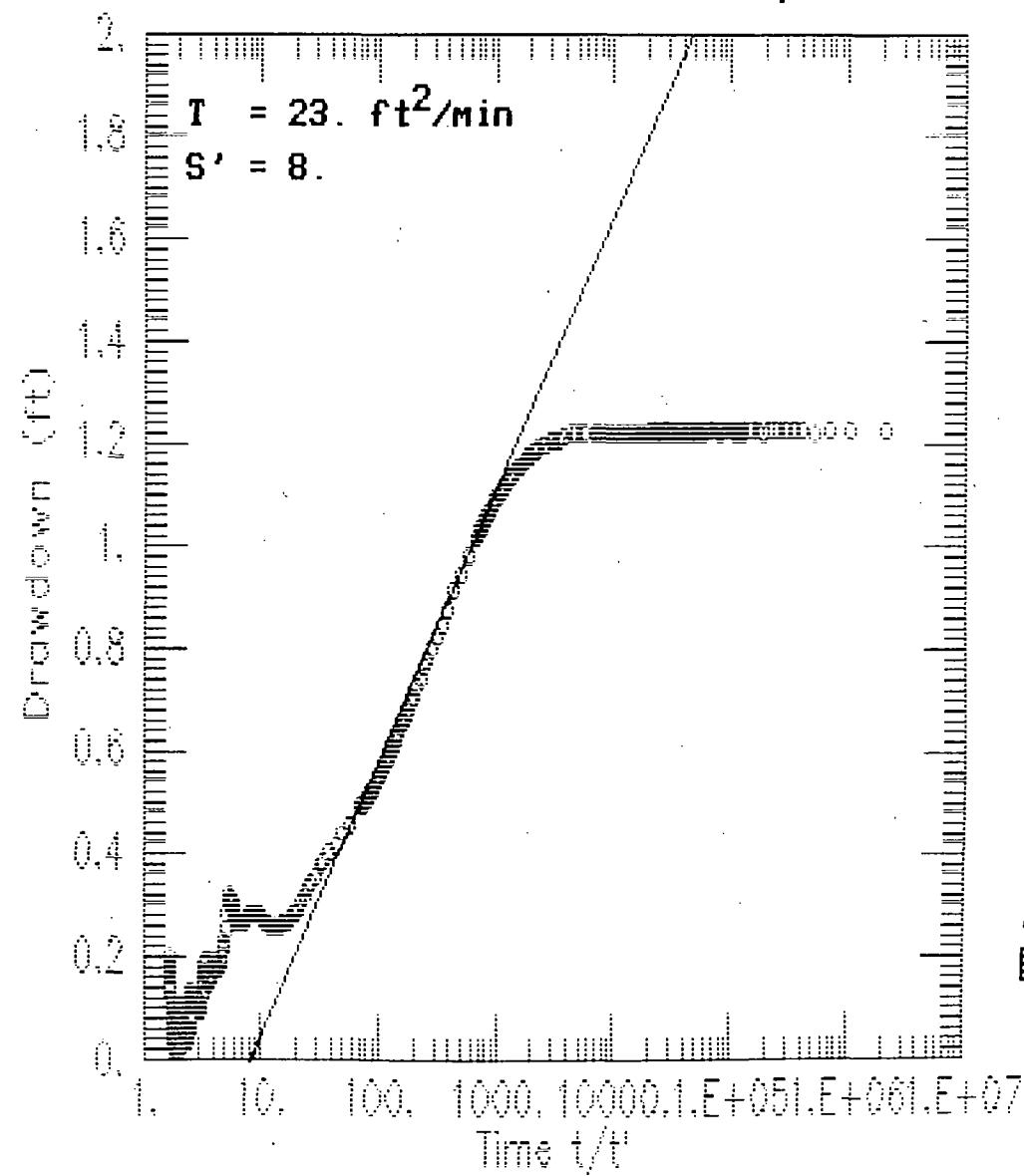
# mw58 east well pump test



AQTESOLY



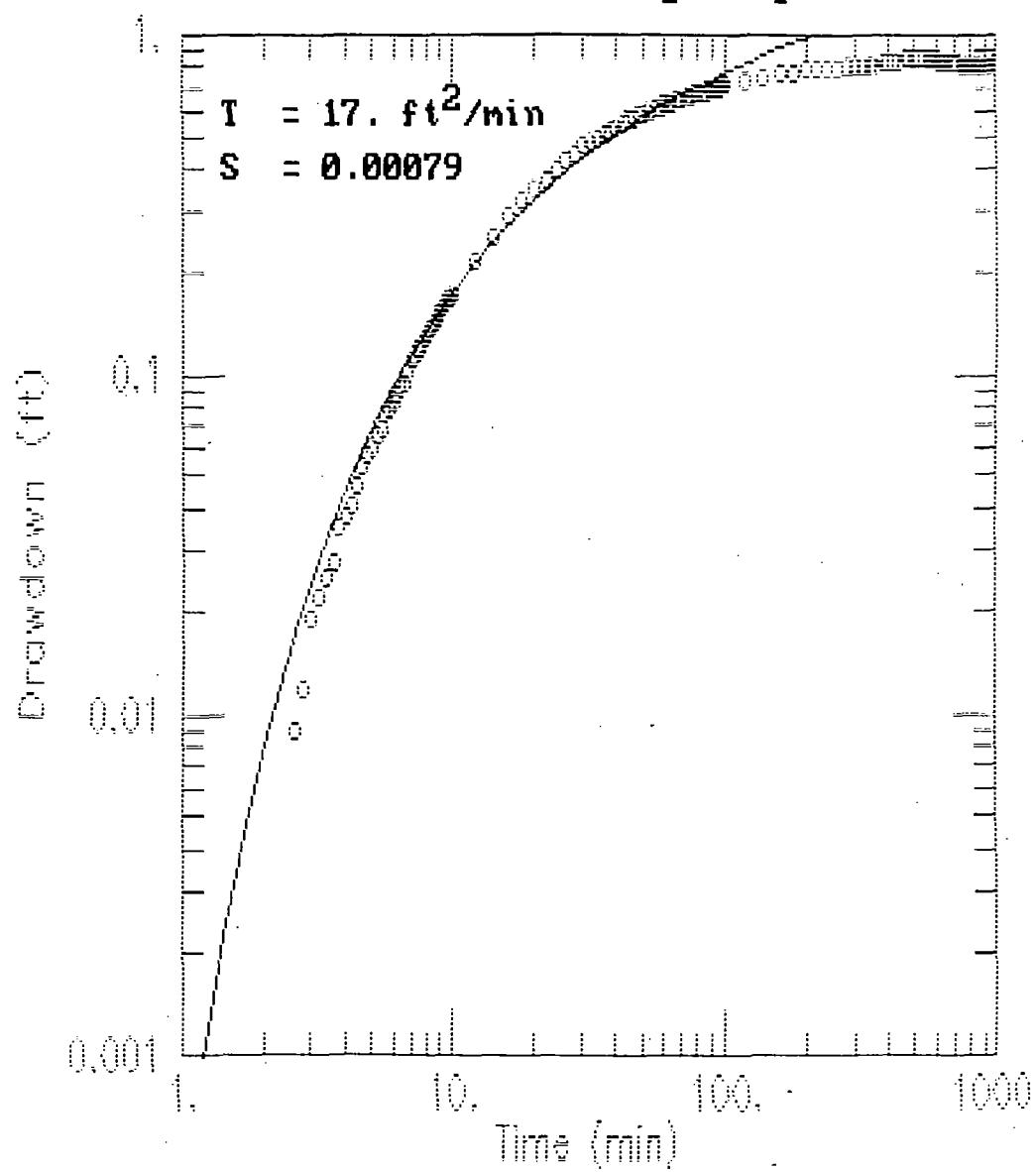
# mw58 east well recovery data



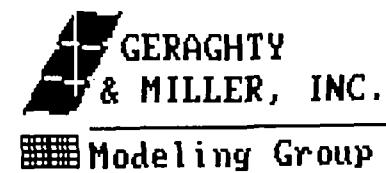
AQTESOLV



# mw58 east well pump test



AQTESOLV



GERAGHTY  
& MILLER, INC.

Modeling Group

**APPENDIX E**  
**PIEZOMETRIC MAP INPUTS**

PIEZOMETRIC MAP INPUTS

APPROXIMATELY 1.5 HOURS BEFORE EAST WELL TEST

WELL	CASING EL.	INITIAL W.L.	CHANGE IN W.L.	CASING CORRECTION	WATER ELEVATION
1	343.62	60.1		0.16	283.68
4	339.95	55.81			284.14
10	343.66	60.13		0.14	283.67
12	344.44	61.31			283.13
14	342.91	61.19	0.721	0.17	282.611
16	338.08	54.44			283.64
58	359.95	79.36	0.161		280.751
61	336.88	50.78			286.1

APPROXIMATELY 3 HOURS BEFORE TWO WELL TEST

WELL	CASING EL.	INITIAL W.L.	CHANGE IN W.L.	CASING CORRECTION	WATER ELEVATION
1	343.62	60.13		0.16	283.65
4	339.95	55.95			284
10	343.66	60.16		0.14	283.64
12	344.44	61.49			282.95
14	342.91	61.19	0.149	0.17	282.039
16	338.08	54.63			283.45
58	359.95	79.36	0.155		280.745
61	336.88	50.76			286.12

**APPENDIX F**  
**VERTICAL GRADIENT CALCULATIONS**

## RELATIVE VERTICAL CONDUCTIVITY CALCULATIONS

The equation shown below was taken from the **AQTESOLV** User's Manual, Appendix A, and is based on unsteady flow to a well in a semi-confined aquifer with storage in the aquitards. This equation assumes no leakage through the bottom aquitard.

$$\beta = \frac{r}{4} \left[ \frac{(K'S')^{0.5}}{(b'TS)^{0.5}} \right]$$

Where

- $r$  = radius from pumping well to observation well;
- $b'$  = thickness of aquitard overlying aquifer;
- $K'$  = vertical hydraulic conductivity of aquitard overlying aquifer;
- $S'$  = coefficient of storage of aquitard overlying aquifer.

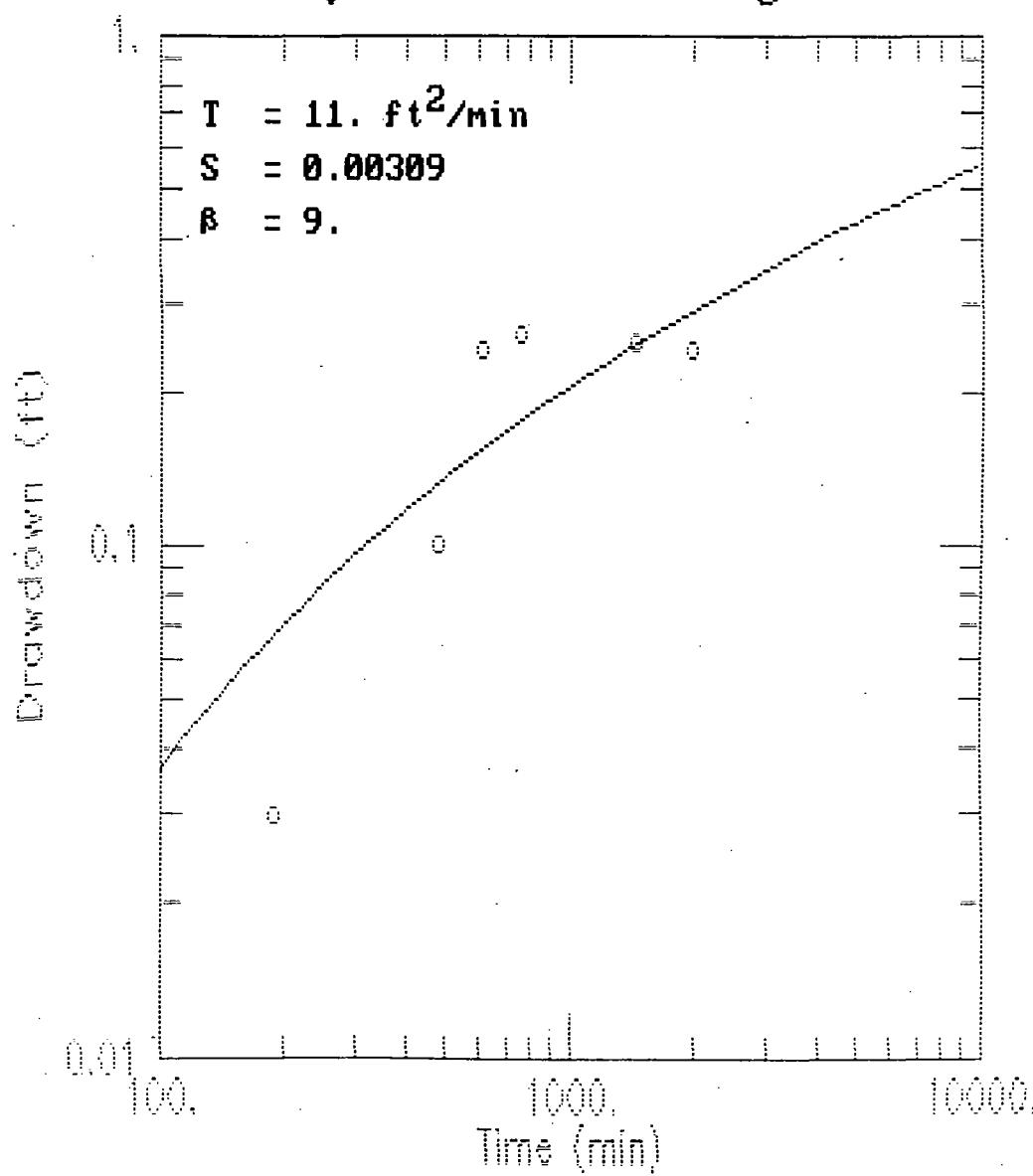
Solving for the relative vertical hydraulic conductivity,  $K'S'$  gave the following equation:

$$K'S' = \left[ \frac{4\beta(b'TS)^{0.5}}{r} \right]^2$$

The parameters used to solve this equation and the values obtained for  $K'S'$  are shown below.

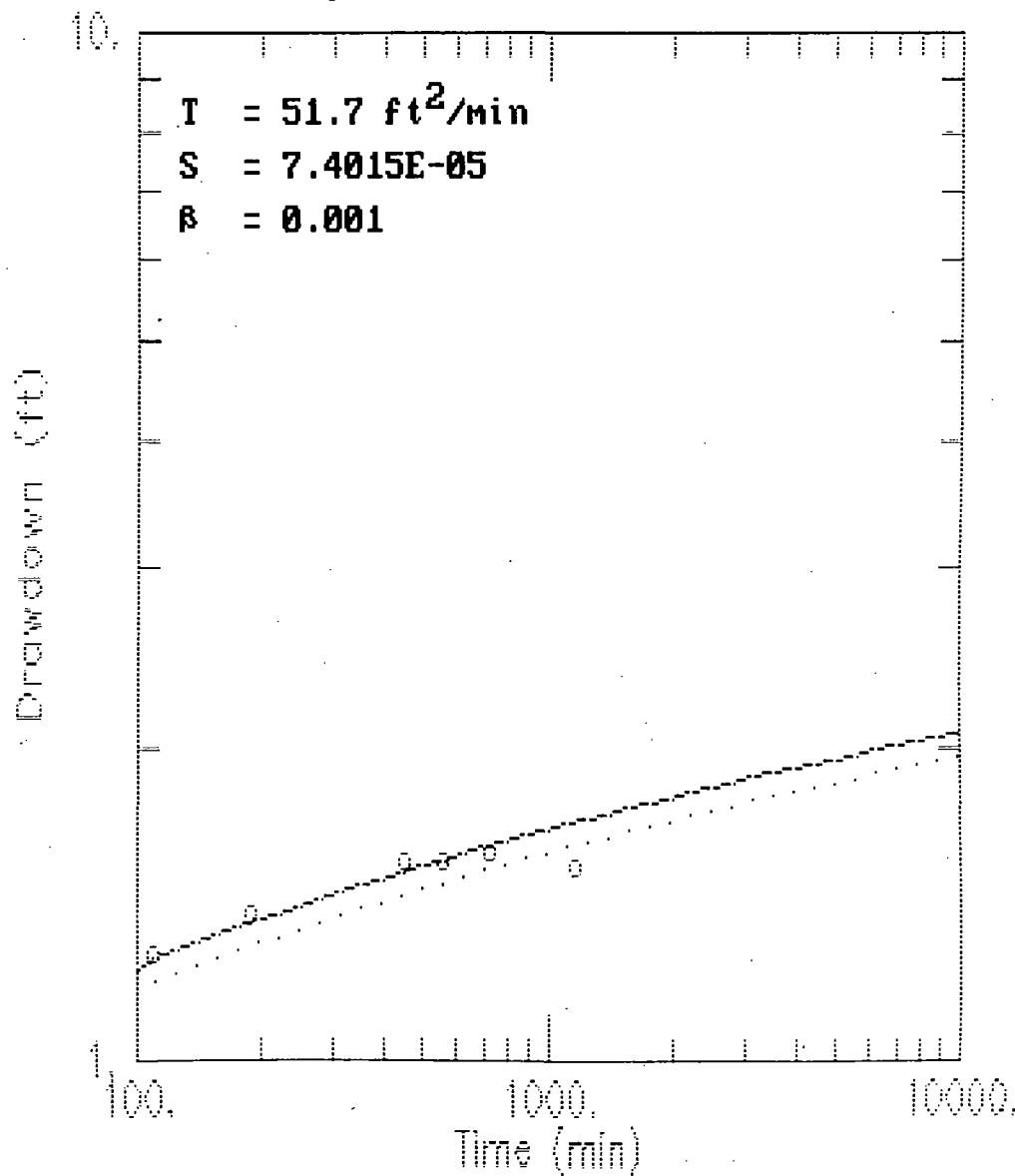
WELL	T	S	$\beta$	r	b'	$S'K'$
4	11.00	0.003	9	1800	13	0.00017
6	30.00	0.000133	0.12	1300	21.5	$1.18 \times 10^{-8}$
14	35.31	0.00025	0.1	700	24	$6.9 \times 10^{-8}$
58	51.7	0.000074	0.001	500	89	$2.18 \times 10^{-11}$

# leaky estimates using mw4



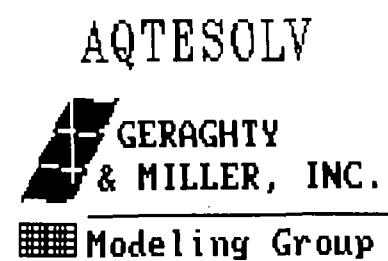
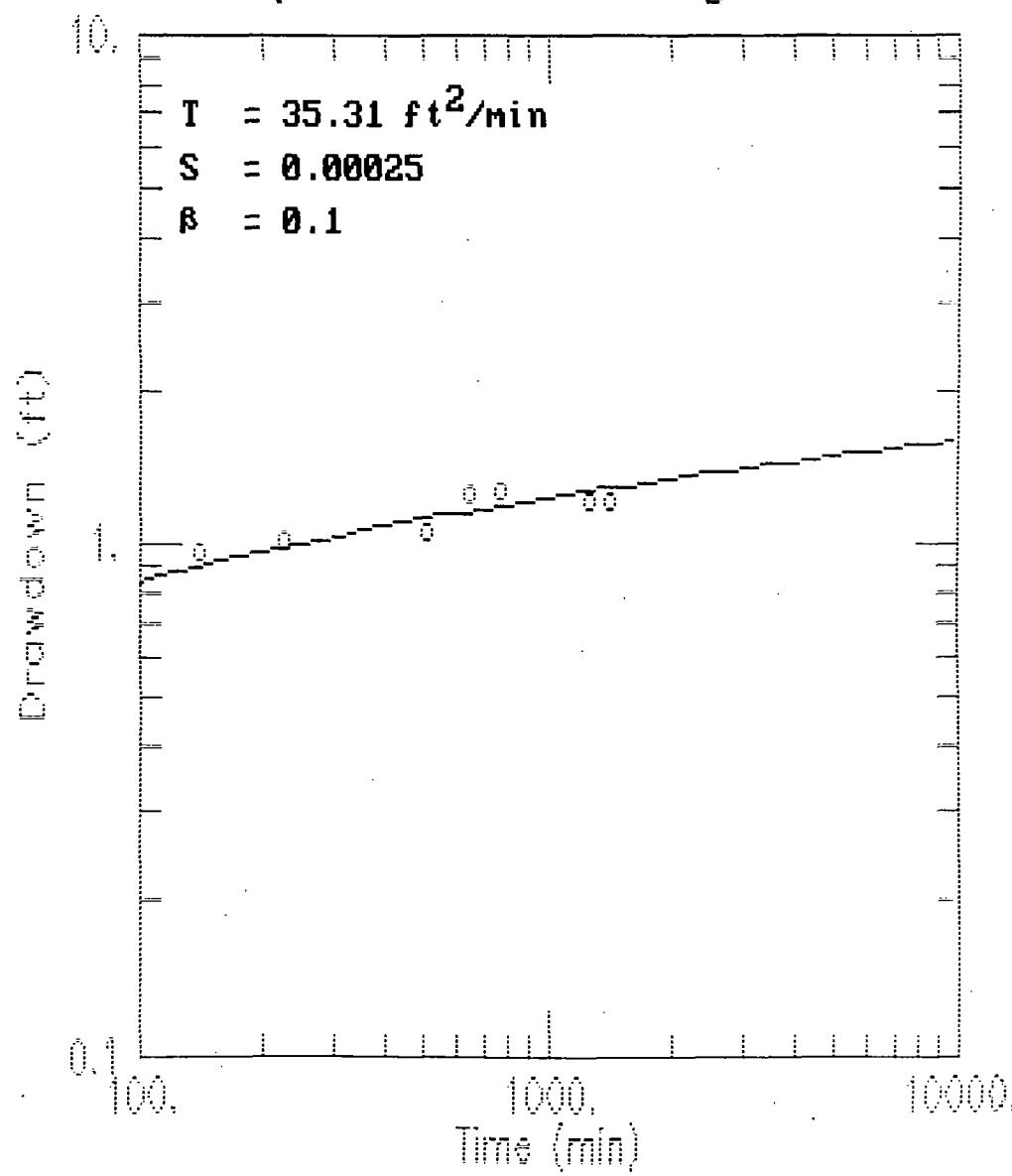
AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

# leaky solution with mw58

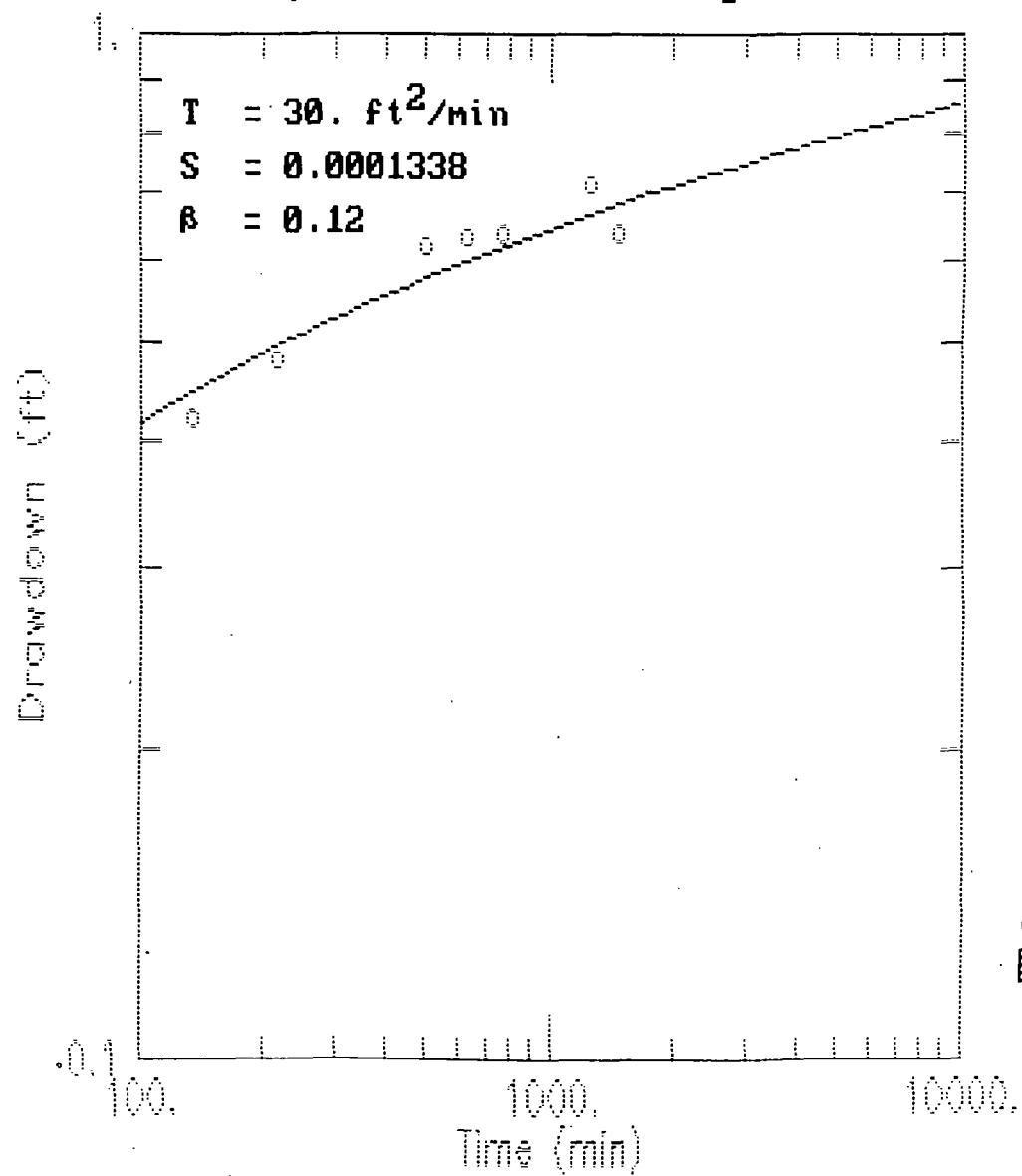


AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

# leaky estimates using mw-14



## leaky estimates using mw-6



AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

## SECOND RECOVERY PERIOD

ELAPSED TIME	INPUT 1 MW-14	INPUT 2 WESTWE	INPUT 3 EASTWEL	INPUT 4 APT1	INPUT 5 APT2	INPUT 6 BAROME
0	0.056	5.403	17.719	1.083	0.94	14.69
0.0083	0.056	5.403	17.688	1.074	0.94	14.687
0.0166	0.059	5.419	17.625	1.074	0.94	14.692
0.025	0.059	5.403	17.578	1.074	0.95	14.685
0.0333	0.059	5.419	17.625	1.074	0.95	14.692
0.0416	0.059	5.419	9.518	1.074	0.94	14.69
0.05	0.056	5.403	10.9	1.074	0.95	14.69
0.0583	0.056	5.403	10.46	1.074	0.95	14.687
0.0666	0.059	5.419	11.246	1.074	0.94	14.687
0.075	0.059	5.419	10.445	1.083	0.95	14.687
0.0833	0.056	5.419	8.622	1.083	0.95	14.692
0.0916	0.059	5.435	7.209	1.083	0.95	14.69
0.1	0.056	5.419	6.894	1.083	0.95	14.692
0.1083	0.059	5.387	5.386	1.083	0.94	14.687
0.1166	0.059	5.419	4.774	1.093	0.95	14.687
0.125	0.062	5.435	3.407	1.093	0.95	14.692
0.1333	0.059	5.419	3.156	1.093	0.95	14.69
0.1416	0.059	5.403	1.806	1.093	0.95	14.69
0.15	0.059	5.419	1.915	1.102	0.95	14.69
0.1583	0.059	5.435	0.8	1.102	0.95	14.69
0.1666	0.059	5.435	0.8	1.102	0.95	14.692
0.175	0.056	5.403	0.047	1.112	0.95	14.69
0.1833	0.059	5.403	-0.596	1.112	0.95	14.687
0.1916	0.056	5.403	-0.816	1.112	0.95	14.692
0.2	0.059	5.419	-1.319	1.102	0.95	14.692
0.2083	0.059	5.435	-1.444	1.112	0.95	14.687
0.2166	0.056	5.435	-1.837	1.112	0.95	14.687
0.225	0.056	5.435	-1.727	1.112	0.959	14.69
0.2333	0.056	5.435	-2.371	1.121	0.95	14.694
0.2416	0.056	5.419	-2.355	1.121	0.959	14.685
0.25	0.056	5.435	-2.7	1.121	0.959	14.687
0.2583	0.056	5.419	-3.156	1.121	0.959	14.694
0.2666	0.056	5.435	-3.454	1.121	0.959	14.687
0.275	0.059	5.435	-3.454	1.121	0.959	14.687
0.2833	0.059	5.435	-3.533	1.121	0.959	14.69
0.2916	0.056	5.45	-3.36	1.121	0.959	14.692

0.3	0.056	5.419	-3.658	1.121	0.959	14.692
0.3083	0.056	5.435	-3.595	1.121	0.969	14.694
0.3166	0.059	5.403	-3.815	1.121	0.959	14.69
0.325	0.056	5.419	-3.69	1.131	0.969	14.692
0.3333	0.056	5.45	-3.988	1.131	0.969	14.685
0.35	0.059	5.435	-4.114	1.131	0.969	14.687
0.3666	0.062	5.419	-4.114	1.121	0.969	14.69
0.3833	0.059	5.435	-4.286	1.131	0.969	14.694
0.4	0.056	5.45	-4.318	1.131	0.969	14.696
0.4166	0.059	5.419	-4.145	1.131	0.969	14.692
0.4333	0.059	5.466	-4.239	1.121	0.978	14.69
0.45	0.056	5.45	-4.145	1.131	0.978	14.687
0.4666	0.056	5.45	-4.428	1.131	0.978	14.692
0.4833	0.056	5.45	-4.224	1.121	0.978	14.69
0.5	0.059	5.466	-4.239	1.121	0.978	14.685
0.5166	0.059	5.45	-4.349	1.121	0.988	14.69
0.5333	0.056	5.466	-4.176	1.121	0.978	14.692
0.55	0.056	5.466	-4.318	1.112	0.988	14.69
0.5666	0.053	5.466	-4.271	1.112	0.988	14.685
0.5833	0.056	5.482	-4.051	1.112	0.988	14.696
0.6	0.056	5.482	-4.145	1.112	0.988	14.69
0.6166	0.056	5.482	-4.004	1.102	0.988	14.692
0.6333	0.056	5.482	-3.91	1.102	0.988	14.687
0.65	0.053	5.482	-4.067	1.102	0.988	14.69
0.6666	0.053	5.497	-3.91	1.102	0.988	14.692
0.6833	0.056	5.482	-3.831	1.102	0.988	14.69
0.7	0.053	5.482	-3.8	1.093	0.988	14.687
0.7166	0.053	5.497	-3.753	1.093	0.997	14.694
0.7333	0.062	5.497	-3.564	1.093	0.988	14.687
0.75	0.059	5.513	-3.595	1.083	0.997	14.692
0.7666	0.059	5.513	-3.438	1.074	0.997	14.687
0.7833	0.056	5.497	-3.36	1.074	0.988	14.69
0.8	0.056	5.513	-3.36	1.074	0.997	14.692
0.8166	0.056	5.529	-3.234	1.074	0.997	14.694
0.8333	0.056	5.529	-3.266	1.064	0.988	14.687
0.85	0.056	5.545	-3.14	1.064	0.997	14.692
0.8666	0.053	5.545	-3.093	1.064	0.988	14.692
0.8833	0.056	5.513	-2.967	1.055	0.997	14.687
0.9	0.053	5.529	-2.905	1.055	0.997	14.69
0.9166	0.053	5.529	-2.779	1.055	0.997	14.692

0.9333	0.053	5.56	-2.795	1.045	0.988	14.69
0.95	0.053	5.576	-2.622	1.045	0.988	14.69
0.9666	0.053	5.545	-2.606	1.036	0.988	14.687
0.9833	0.053	5.545	-2.543	1.045	0.988	14.69
1	0.049	5.56	-2.386	1.036	0.988	14.692
1.2	0.049	5.592	-1.381	0.988	0.969	14.692
1.4	0.053	5.639	-0.612	0.96	0.94	14.69
1.6	0.049	5.67	-0.062	0.922	0.912	14.692
1.8	0.049	5.686	0.282	0.893	0.893	14.692
2	0.049	5.733	0.424	0.874	0.864	14.696
2.2	0.049	5.78	0.424	0.855	0.845	14.692
2.4	0.046	5.812	0.471	0.836	0.826	14.692
2.6	0.043	5.859	0.471	0.817	0.817	14.69
2.8	0.043	5.89	0.471	0.808	0.798	14.69
3	0.043	5.937	0.549	0.779	0.779	14.69
3.2	0.04	6	0.596	0.77	0.76	14.69
3.4	0.034	6.063	0.565	0.751	0.741	14.692
3.6	0.031	6.11	0.596	0.741	0.722	14.696
3.8	0.028	6.157	0.581	0.722	0.712	14.687
4	0.024	6.204	0.596	0.713	0.703	14.696
4.2	0.021	6.236	0.643	0.694	0.693	14.694
4.4	0.015	6.283	0.659	0.684	0.674	14.696
4.6	0.015	6.314	0.675	0.675	0.665	14.694
4.8	0.009	6.377	0.706	0.665	0.655	14.692
5	0.009	6.408	0.738	0.646	0.646	14.69
5.2	0.006	6.44	0.738	0.636	0.636	14.692
5.4	0	6.44	0.738	0.627	0.627	14.69
5.6	0	6.44	0.738	0.627	0.608	14.69
5.8	-0.006	6.455	0.738	0.608	0.598	14.69
6	-0.009	6.455	0.738	0.608	0.598	14.692
6.2	-0.009	6.44	0.722	0.589	0.589	14.69
6.4	-0.015	6.455	0.706	0.589	0.579	14.696
6.6	-0.018	6.455	0.706	0.579	0.56	14.69
6.8	-0.021	6.455	0.706	0.57	0.551	14.69
7	-0.024	6.44	0.69	0.56	0.551	14.692
7.2	-0.028	6.44	0.659	0.551	0.541	14.694
7.4	-0.034	6.424	0.659	0.541	0.532	14.69
7.6	-0.037	6.408	0.675	0.532	0.532	14.692
7.8	-0.04	6.424	0.659	0.522	0.513	14.692
8	-0.043	6.424	0.659	0.513	0.513	14.692

8.2	-0.049	6.424	0.643	0.513	0.503	14.687
8.4	-0.049	6.424	0.643	0.503	0.494	14.692
8.6	-0.053	6.408	0.628	0.494	0.484	14.692
8.8	-0.056	6.408	0.628	0.484	0.484	14.69
9	-0.062	6.393	0.628	0.475	0.475	14.69
9.2	-0.062	6.393	0.612	0.465	0.465	14.692
9.4	-0.065	6.393	0.596	0.456	0.456	14.69
9.6	-0.071	6.393	0.612	0.456	0.446	14.687
9.8	-0.071	6.393	0.612	0.446	0.446	14.69
10	-0.074	6.408	0.612	0.446	0.427	14.69
12	-0.106	6.393	0.612	0.389	0.38	14.692
14	-0.131	6.408	0.612	0.342	0.323	14.692
16	-0.159	6.503	0.581	0.294	0.285	14.694
18	-0.181	6.581	0.549	0.256	0.247	14.692
20	-0.203	6.565	0.518	0.228	0.209	14.69
22	-0.221	6.55	0.486	0.199	0.18	14.692
24	-0.24	6.565	0.455	0.171	0.152	14.692
26	-0.259	6.534	0.424	0.142	0.133	14.694
28	-0.274	6.518	0.408	0.123	0.104	14.69
30	-0.293	6.503	0.376	0.104	0.085	14.692
32	-0.303	6.487	0.361	0.085	0.066	14.692
34	-0.318	6.471	0.345	0.066	0.047	14.69
36	-0.331	6.455	0.329	0.047	0.028	14.701
38	-0.343	6.44	0.298	0.028	0.009	14.696
40	-0.356	6.44	0.282	0.019	0	14.685
42	-0.365	6.44	0.282	0.009	-0.009	14.705
44	-0.378	6.424	0.266	-0.009	-0.028	14.692
46	-0.387	6.408	0.266	-0.019	-0.038	14.694
48	-0.399	6.393	0.251	-0.028	-0.047	14.694
50	-0.406	6.377	0.235	-0.038	-0.057	14.696
52	-0.415	6.377	0.219	-0.057	-0.076	14.694
54	-0.418	6.361	0.219	-0.066	-0.085	14.694
56	-0.434	6.33	0.172	-0.123	-0.133	14.696
58	-0.437	6.346	0.204	-0.076	-0.095	14.694
60	-0.446	6.346	0.188	-0.085	-0.104	14.694
62	-0.456	6.33	0.172	-0.095	-0.114	14.703
64	-0.459	6.33	0.172	-0.104	-0.123	14.705
66	-0.465	6.314	0.157	-0.114	-0.133	14.701
68	-0.474	6.314	0.157	-0.123	-0.133	14.703
70	-0.477	6.314	0.157	-0.123	-0.142	14.701

72	-0.484	6.298	0.141	-0.133	-0.152	14.705
74	-0.487	6.283	0.141	-0.133	-0.152	14.701
76	-0.49	6.283	0.141	-0.142	-0.171	14.703
78	-0.493	6.283	0.141	-0.152	-0.171	14.699
80	-0.502	6.283	0.125	-0.152	-0.18	14.701
82	-0.502	6.283	0.109	-0.161	-0.171	14.705
84	-0.512	6.267	0.109	-0.152	-0.18	14.707
86	-0.518	6.267	0.109	-0.171	-0.19	14.705
88	-0.518	6.267	0.109	-0.171	-0.19	14.705
90	-0.521	6.251	0.109	-0.18	-0.199	14.707
92	-0.521	6.251	0.109	-0.18	-0.199	14.705
94	-0.524	6.236	0.094	-0.18	-0.209	14.707
96	-0.534	6.251	0.078	-0.19	-0.209	14.707
98	-0.531	6.236	0.094	-0.19	-0.209	14.705
100	-0.534	6.236	0.094	-0.19	-0.209	14.71
120	-0.562	6.204	0.047	-0.209	-0.247	14.705
140	-0.59	6.188	0.015	-0.237	-0.266	14.703
160	-0.609	6.063	0	-0.247	-0.285	14.705
180	-0.631	6.047	-0.015	-0.275	-0.313	14.701
200	-0.652	6.031	-0.047	-0.285	-0.323	14.701
220	-0.668	6.016	-0.078	-0.313	-0.342	14.699
240	-0.687	6	-0.078	-0.323	-0.351	14.692
260	-0.699	5.984	-0.094	-0.342	-0.37	14.687
280	-0.712	5.969	-0.109	-0.351	-0.38	14.683
300	-0.727	5.953	-0.109	-0.361	-0.399	14.685
320	-0.737	5.953	-0.141	-0.38	-0.408	14.676
340	-0.749	5.937	-0.141	-0.389	-0.418	14.683
360	-0.762	5.921	-0.157	-0.399	-0.427	14.676
380	-0.768	5.921	-0.172	-0.408	-0.437	14.676
400	-0.787	5.921	-0.172	-0.418	-0.437	14.676
420	-0.784	5.906	-0.172	-0.418	-0.446	14.687
440	-0.79	5.921	-0.172	-0.418	-0.446	14.679
460	-0.793	5.906	-0.188	-0.427	-0.446	14.681
480	-0.799	5.906	-0.188	-0.427	-0.456	14.685
500	-0.802	5.906	-0.188	-0.437	-0.456	14.685
520	-0.806	5.906	-0.188	-0.427	-0.465	14.69
540	-0.812	5.906	-0.204	-0.437	-0.456	14.683
560	-0.815	5.906	-0.188	-0.437	-0.456	14.692
580	-0.815	5.906	-0.188	-0.427	-0.456	14.652
600	-0.815	5.906	-0.188	-0.427	-0.456	14.654

620	-0.812	5.906	-0.188	-0.427	-0.456	14.654
640	-0.806	5.906	-0.188	-0.427	-0.456	14.657
660	-0.806	5.906	-0.188	-0.427	-0.456	14.659
680	-0.796	5.921	-0.188	-0.418	-0.456	14.663
700	-0.796	5.921	-0.188	-0.418	-0.456	14.663
720	-0.79	5.921	-0.172	-0.418	-0.446	14.668
740	-0.781	5.921	-0.172	-0.418	-0.446	14.67
760	-0.774	5.921	-0.172	-0.408	-0.446	14.672
780	-0.771	5.937	-0.172	-0.399	-0.437	14.676
800	-0.768	5.937	-0.172	-0.408	-0.437	14.676
820	-0.771	5.937	-0.172	-0.399	-0.437	14.679
840	-0.768	5.937	-0.172	-0.399	-0.437	14.679
860	-0.768	5.937	-0.172	-0.399	-0.437	14.679
880	-0.771	5.937	-0.157	-0.399	-0.437	14.679
900	-0.765	5.937	-0.172	-0.399	-0.437	14.679
920	-0.765	5.937	-0.172	-0.399	-0.437	14.683
940	-0.768	5.937	-0.157	-0.399	-0.437	14.685
960	-0.765	5.937	-0.172	-0.399	-0.437	14.687
980	-0.768	5.937	-0.172	-0.399	-0.437	14.685
1000	-0.771	5.953	-0.157	-0.408	-0.437	14.685
1060	-0.771	5.937	-0.172	-0.408	-0.446	14.687
1120	-0.777	5.937	-0.172	-0.408	-0.456	14.687
1180	-0.79	5.937	-0.188	-0.418	-0.456	14.694
1240	-0.793	5.937	-0.188	-0.418	-0.456	14.699
1300	-0.796	5.937	-0.172	-0.408	-0.456	14.738
1360	-0.787	5.953	-0.172	-0.399	-0.437	14.745
1420	-0.768	5.953	-0.157	-0.389	-0.418	14.765
1480	-0.756	5.984	-0.157	-0.38	-0.418	14.767
1540	-0.746	5.969	-0.141	-0.37	-0.399	14.765
1600	-0.74	5.953	-0.172	-0.389	-0.418	14.767
1660	-0.771	5.937	-0.172	-0.399	-0.427	14.752
1720	-0.799	5.906	-0.219	-0.437	-0.465	14.732
1780	-0.815	5.89	-0.235	-0.456	-0.484	14.73
1840	-0.831	5.874	-0.251	-0.475	-0.503	14.723
1900	-0.859	5.859	-0.251	-0.484	-0.513	14.725
1960	-0.887	5.843	-0.282	-0.503	-0.532	14.716
2020	-0.902	5.843	-0.282	-0.513	-0.541	14.685
2080	-0.899	5.843	-0.282	-0.503	-0.541	14.69
2140	-0.893	5.843	-0.266	-0.503	-0.532	14.694
2200	-0.887	5.859	-0.266	-0.494	-0.532	14.696

2260	-0.874	5.859	-0.251	-0.494	-0.532	14.696
2320	-0.871	5.859	-0.266	-0.494	-0.532	14.696
2380	-0.877	5.859	-0.251	-0.494	-0.541	14.692
2440	-0.877	5.859	-0.266	-0.503	-0.541	14.69
2500	-0.893	5.843	-0.282	-0.513	-0.56	14.679
2560	-0.899	5.843	-0.282	-0.522	-0.57	14.681
2620	-0.909	5.827	-0.298	-0.532	-0.579	14.679
2680	-0.906	5.827	-0.298	-0.522	-0.57	14.683
2740	-0.909	5.827	-0.282	-0.522	-0.57	14.723
2800	-0.912	5.843	-0.282	-0.513	-0.551	14.73
2860	-0.906	5.859	-0.282	-0.513	-0.541	14.738
2920	-0.893	5.874	-0.282	-0.503	-0.541	14.738
2980	-0.896	5.859	-0.282	-0.503	-0.541	14.734
3040	-0.915	5.843	-0.298	-0.522	-0.551	14.732
3100	-0.924	5.827	-0.314	-0.551	-0.579	14.721
3160	-0.949	5.796	-0.329	-0.57	-0.598	14.705
3220	-0.965	5.78	-0.345	-0.579	-0.608	14.703
3280	-0.977	5.764	-0.361	-0.598	-0.627	14.701
3340	-0.99	5.764	-0.361	-0.608	-0.636	14.701
3400	-0.993	5.764	-0.361	-0.598	-0.627	14.701
3460	-1.002	5.764	-0.361	-0.598	-0.636	14.659
3520	-0.99	5.78	-0.345	-0.589	-0.627	14.663
3580	-0.977	5.78	-0.329	-0.579	-0.617	14.668
3640	-0.959	5.796	-0.329	-0.57	-0.608	14.67
3700	-0.952	5.796	-0.329	-0.56	-0.608	14.663
3760	-0.946	5.812	-0.314	-0.56	-0.608	14.665
3820	-0.934	5.812	-0.314	-0.56	-0.598	14.668
3880	-0.94	5.812	-0.314	-0.56	-0.608	14.661
3940	-0.937	5.812	-0.314	-0.57	-0.617	14.657
4000	-0.943	5.796	-0.314	-0.57	-0.617	14.657
4060	-0.946	5.796	-0.329	-0.57	-0.617	14.657
4120	-0.943	5.812	-0.314	-0.57	-0.617	14.661
4180	-0.946	5.812	-0.329	-0.56	-0.617	14.694
4240	-0.955	5.812	-0.314	-0.57	-0.608	14.69
4300	-0.962	5.812	-0.314	-0.56	-0.598	14.707
4360	-0.955	5.812	-0.329	-0.56	-0.598	14.707
4420	-0.965	5.812	-0.329	-0.57	-0.608	14.71
4480	-0.977	5.796	-0.345	-0.589	-0.617	14.699
4540	-0.996	5.764	-0.376	-0.608	-0.636	14.679
4600	-1.018	5.749	-0.392	-0.627	-0.655	14.663

4660	-1.034	5.733	-0.408	-0.646	-0.674	14.663
4720	-1.052	5.717	-0.424	-0.655	-0.684	14.661
4780	-1.065	5.717	-0.424	-0.655	-0.684	14.661
4840	-1.071	5.717	-0.424	-0.665	-0.693	14.652
4900	-1.074	5.717	-0.408	-0.655	-0.684	14.608
4960	-1.065	5.717	-0.392	-0.646	-0.684	14.612
5020	-1.052	5.733	-0.392	-0.636	-0.684	14.615
5080	-1.043	5.733	-0.392	-0.636	-0.674	14.612
5140	-1.03	5.749	-0.376	-0.627	-0.674	14.608
5200	-1.037	5.749	-0.376	-0.627	-0.674	14.603
5260	-1.037	5.733	-0.392	-0.636	-0.684	14.599
5320	-1.043	5.733	-0.392	-0.636	-0.684	14.592
5380	-1.049	5.733	-0.392	-0.646	-0.693	14.588
5440	-1.037	5.733	-0.392	-0.646	-0.693	14.588
5500	-1.024	5.733	-0.392	-0.646	-0.693	14.59
5560	-1.012	5.749	-0.376	-0.627	-0.674	14.599
5620	-1.012	5.764	-0.376	-0.617	-0.665	14.637
5680	-1.012	5.764	-0.361	-0.608	-0.646	14.643
5740	-1.009	5.796	-0.361	-0.598	-0.627	14.65
5800	-1.002	5.796	-0.361	-0.608	-0.636	14.65
5860	-1.005	5.78	-0.392	-0.617	-0.636	14.652
5920	-1.018	5.764	-0.392	-0.627	-0.646	14.654
5980	-1.04	5.733	-0.408	-0.646	-0.665	14.643
6040	-1.059	5.717	-0.424	-0.665	-0.684	14.632
6100	-1.08	5.717	-0.439	-0.675	-0.703	14.612
6160	-1.09	5.717	-0.439	-0.675	-0.703	14.617
6220	-1.102	5.702	-0.439	-0.684	-0.712	14.617
6280	-1.102	5.717	-0.439	-0.675	-0.712	14.606
6340	-1.102	5.717	-0.424	-0.665	-0.703	14.57
6400	-1.084	5.733	-0.408	-0.655	-0.693	14.575
6460	-1.071	5.749	-0.392	-0.646	-0.684	14.577
6520	-1.059	5.749	-0.392	-0.636	-0.674	14.575
6580	-1.043	5.749	-0.392	-0.636	-0.674	14.573
6640	-1.043	5.749	-0.392	-0.646	-0.684	14.566
6700	-1.052	5.749	-0.392	-0.646	-0.693	14.564
6760	-1.04	5.749	-0.392	-0.646	-0.693	14.561
6820	-1.049	5.749	-0.392	-0.646	-0.693	14.555
6880	-1.046	5.749	-0.392	-0.646	-0.693	14.555
6940	-1.04	5.749	-0.392	-0.646	-0.693	14.557
7000	-1.027	5.764	-0.376	-0.636	-0.684	14.564

7060	-1.024	5.78	-0.376	-0.617	-0.665	14.599
7120	-1.024	5.78	-0.376	-0.617	-0.655	14.606
7180	-1.018	5.78	-0.376	-0.617	-0.646	14.612
7240	-1.021	5.78	-0.376	-0.627	-0.646	14.617
7300	-1.037	5.764	-0.408	-0.646	-0.665	14.615
7360	-1.052	5.733	-0.424	-0.665	-0.674	14.61
7420	-1.062	5.717	-0.439	-0.684	-0.693	14.608
7480	-1.09	5.702	-0.455	-0.694	-0.712	14.588
7540	-1.102	5.686	-0.455	-0.703	-0.722	14.573
7600	-1.124	5.686	-0.471	-0.703	-0.731	14.57
7660	-1.14	5.686	-0.471	-0.703	-0.741	14.561
7720	-1.143	5.686	-0.471	-0.703	-0.731	14.564
7780	-1.14	5.702	-0.439	-0.694	-0.731	14.524
7840	-1.124	5.702	-0.439	-0.684	-0.722	14.528
7900	-1.105	5.717	-0.424	-0.665	-0.712	14.533
7960	-1.099	5.717	-0.408	-0.675	-0.712	14.528
8020	-1.09	5.717	-0.408	-0.665	-0.703	14.528
8080	-1.096	5.733	-0.408	-0.665	-0.712	14.522
8140	-1.102	5.717	-0.424	-0.675	-0.722	14.513
8200	-1.096	5.717	-0.424	-0.675	-0.722	14.513
8260	-1.093	5.717	-0.424	-0.675	-0.722	14.515
8320	-1.096	5.733	-0.424	-0.665	-0.712	14.513
8380	-1.08	5.733	-0.408	-0.655	-0.703	14.517
8440	-1.074	5.749	-0.392	-0.646	-0.693	14.526
8500	-1.074	5.749	-0.392	-0.636	-0.684	14.561
8560	-1.068	5.764	-0.376	-0.627	-0.665	14.568
8620	-1.065	5.78	-0.392	-0.627	-0.665	14.577
8680	-1.059	5.78	-0.361	-0.617	-0.646	14.586
8740	-1.049	5.78	-0.361	-0.608	-0.646	14.588
8800	-1.059	5.78	-0.376	-0.627	-0.655	14.588
8860	-1.08	5.733	-0.408	-0.646	-0.674	14.577
8920	-1.093	5.733	-0.424	-0.665	-0.684	14.568
8980	-1.102	5.733	-0.424	-0.655	-0.693	14.561
9040	-1.105	5.733	-0.408	-0.646	-0.684	14.575
9100	-1.112	5.749	-0.408	-0.646	-0.684	14.581
9160	-1.096	5.749	-0.392	-0.627	-0.665	14.59
9220	-1.096	5.764	-0.376	-0.617	-0.665	14.544
9280	-1.087	5.78	-0.361	-0.608	-0.646	14.553
9340	-1.055	5.812	-0.345	-0.579	-0.627	14.57
9400	-1.037	5.827	-0.314	-0.57	-0.617	14.575

9460	-1.024	5.827	-0.314	-0.56	-0.608	14.579
9520	-1.021	5.827	-0.298	-0.56	-0.608	14.579
9580	-1.021	5.827	-0.314	-0.56	-0.608	14.581
9640	-1.015	5.827	-0.314	-0.56	-0.608	14.584
9700	-1.009	5.827	-0.314	-0.56	-0.608	14.581
9760	-1.015	5.827	-0.298	-0.56	-0.608	14.588
9820	-0.999	5.843	-0.298	-0.541	-0.598	14.597
9880	-0.987	5.859	-0.282	-0.532	-0.579	14.61
9940	-0.974	5.874	-0.266	-0.513	-0.57	14.65
10000	-0.98	5.89	-0.266	-0.513	-0.56	14.657
10060	-0.977	5.89	-0.251	-0.503	-0.541	14.672
10120	-0.977	5.89	-0.266	-0.513	-0.541	14.674
10180	-0.984	60.325	59.801	-0.522	-0.551	14.676
10240	12.965	60.341	59.754	-0.532	-0.56	14.683
10300	12.965	60.403	59.691	-0.56	-0.579	14.672
10360	12.965	60.356	59.691	-0.579	-0.608	14.643
10420	12.965	67.214	66.663	55.564	54.617	-1.18

## SECOND RECOVERY PERIOD

ELAPSED INPUT 1

TIME MW-6

0	0.268
0.0033	0.268
0.0066	0.268
0.01	0.268
0.0133	0.268
0.0166	0.268
0.02	0.268
0.0233	0.268
0.0266	0.268
0.03	0.268
0.0333	0.268
0.05	0.268
0.0666	0.252
0.0833	0.268
0.1	0.268
0.1166	0.268
0.1333	0.268
0.15	0.252
0.1666	0.252
0.1833	0.268
0.2	0.268
0.2166	0.268
0.2333	0.252
0.25	0.268
0.2666	0.268
0.2833	0.268
0.3	0.268
0.3166	0.268
0.3333	0.252
0.4166	0.268
0.5	0.268
0.5833	0.268
0.6666	0.252
0.75	0.252
0.8333	0.268
0.9166	0.268
1	0.268
1.0833	0.252
1.1666	0.252
1.25	0.252
1.3333	0.252
1.4166	0.252
1.5	0.268
1.5833	0.268
1.6666	0.268
1.75	0.252
1.8333	0.252

1.9166	0.252
2	0.252
2.5	0.252
3	0.252
3.5	0.252
4	0.252
4.5	0.252
5	0.252
5.5	0.252
6	0.252
6.5	0.252
7	0.252
7.5	0.252
8	0.236
8.5	0.252
9	0.252
9.5	0.236
10	0.236
12	0.236
14	0.252
16	0.22
18	0.22
20	0.205
22	0.205
24	0.205
26	0.189
28	0.189
30	0.173
32	0.173
34	0.157
36	0.142
38	0.142
40	0.142
42	0.142
44	0.126
46	0.126
48	0.11
50	0.11
52	0.11
54	0.094
56	0.094
58	0.078
60	0.078
62	0.078
64	0.078
66	0.063
68	0.078
70	0.063
72	0.063
74	0.063

76	0.047
78	0.047
80	0.047
82	0.047
84	0.047
86	0.047
88	0.031
90	0.031
92	0.031
94	0.031
96	0.031
98	0.031
100	0.031
110	0.015
120	0.015
130	0
140	0
150	0
160	-0.015
170	-0.031
180	-0.031
190	-0.031
200	-0.047
210	-0.047
220	-0.047
230	-0.063
240	-0.047
250	-0.078
260	-0.078
270	-0.094
280	-0.094
290	-0.11
300	-0.11
310	-0.11
320	-0.11
330	-0.126
340	-0.126
350	-0.126
360	-0.126
370	-0.142
380	-0.142
390	-0.142
400	-0.142
410	-0.142
420	-0.142
430	-0.157
440	-0.157
450	-0.157
460	-0.157
470	-0.157

480	-0.157
490	-0.173
500	-0.157
510	-0.173
520	-0.173
530	-0.173
540	-0.173
550	-0.173
560	-0.173
570	-0.173
580	-0.173
590	-0.189
600	-0.189
610	-0.189
620	-0.189
630	-0.189
640	-0.189
650	-0.189
660	-0.173
670	-0.173
680	-0.173
690	-0.173
700	-0.173
710	-0.173
720	-0.173
730	-0.173
740	-0.173
750	-0.157
760	-0.157
770	-0.173
780	-0.157
790	-0.157
800	-0.157
810	-0.157
820	-0.157
830	-0.157
840	-0.157
850	-0.157
860	-0.157
870	-0.157
880	-0.157
890	-0.173
900	-0.157
910	-0.173
920	-0.157
930	-0.173
940	-0.157
950	-0.157
960	-0.157
970	-0.157

980	-0.173
990	-0.173
1000	-0.173
1060	-0.173
1120	-0.189
1180	-0.189
1240	-0.189
1300	-0.205
1360	-0.189
1420	-0.173
1480	-0.157
1540	-0.157
1600	-0.142
1660	-0.173
1720	-0.205
1780	-0.22
1840	-0.236
1900	-0.252
1960	-0.283
2020	-0.299
2080	-0.299
2140	-0.299
2200	-0.283
2260	-0.283
2320	-0.283
2380	-0.299
2440	-0.299
2500	-0.315
2560	-0.331
2620	-0.331
2680	-0.331
2740	-0.315
2800	-0.315
2860	-0.299
2920	-0.283
2980	-0.283
3040	-0.283
3100	-0.315
3160	-0.315
3220	-0.347
3280	-0.362
3340	-0.362
3400	-0.378
3460	-0.378
3520	-0.378
3580	-0.362
3640	-0.362
3700	-0.362
3760	-0.362
3820	-0.362

3880	-0.362
3940	-0.362
4000	-0.362
4060	-0.378
4120	-0.362
4180	-0.362
4240	-0.362
4300	-0.347
4360	-0.347
4420	-0.347
4480	-0.347
4540	-0.362
4600	-0.378
4660	-0.394
4720	-0.41
4780	-0.425
4840	-0.441
4900	-0.441
4960	-0.441
5020	-0.441
5080	-0.425
5140	-0.425
5200	-0.425
5260	-0.441
5320	-0.441
5380	-0.441
5440	-0.441
5500	-0.441
5560	-0.425
5620	-0.425
5680	-0.41
5740	-0.378
5800	-0.362
5860	-0.362
5920	-0.362
5980	-0.378
6040	-0.41
6100	-0.425
6160	-0.441
6220	-0.441
6280	-0.441
6340	-0.441
6400	-0.441
6460	-0.441
6520	-0.441
6580	-0.441
6640	-0.441
6700	-0.441
6760	-0.441
6820	-0.457

6880	-0.441
6940	-0.441
7000	-0.425
7060	-0.41
7120	-0.41
7180	-0.394
7240	-0.378
7300	-0.394
7360	-0.394
7420	-0.41
7480	-0.425
7540	-0.441
7600	-0.457
7660	-0.473
7720	-0.473
7780	-0.473
7840	-0.473
7900	-0.457
7960	-0.457
8020	-0.457
8080	-0.457
8140	-0.473
8200	-0.473
8260	-0.473
8320	-0.457
8380	-0.457
8440	-0.457
8500	-0.441
8560	-0.425
8620	-0.41
8680	-0.394
8740	-0.378
8800	-0.378
8860	-0.378
8920	-0.394
8980	-0.41
9040	-0.41
9100	-0.41
9160	-0.394
9220	-0.41
9280	-0.394
9340	-0.362
9400	-0.347
9460	-0.347
9520	-0.362
9580	-0.362
9640	-0.347
9700	-0.362
9760	-0.347
9820	-0.347

9880	-0.315
9940	-0.315
10000	-0.299
10060	-0.283
10120	-0.283
10180	-0.283
10240	-0.283
10300	18.8
10360	18.8
10420	18.8
10480	18.8
10540	18.8
10600	18.8
10660	18.8
10720	18.8
10780	18.8
10840	18.8
10900	18.8
10960	18.8
11020	18.8
11080	18.8
11140	18.8
11200	18.8
11260	18.8
11320	18.8
11380	18.8
11440	18.8
11500	18.8
11560	18.8
11620	18.8
11680	18.8
11740	18.8
11800	18.8
11860	18.8
11920	18.8
11980	18.8
12040	18.8
12100	18.8
12160	18.8
12220	18.8
12280	18.8
12340	18.8
12400	18.8
12460	18.8
12520	18.8
12580	18.8
12640	18.8
12700	18.8
12760	18.8
12820	18.8

12880	18.8
12940	18.8
13000	18.8
13060	18.8
13120	18.8
13180	18.8
13240	18.8
13300	18.8

## SECOND RECOVERY PERIOD

ELAPSED INPUT 1

TIME MW-58

0	0.801
0.0033	0.801
0.0066	0.801
0.01	0.801
0.0133	0.798
0.0166	0.801
0.02	0.801
0.0233	0.801
0.0266	0.801
0.03	0.801
0.0333	0.801
0.0366	0.798
0.04	0.801
0.0433	0.801
0.0466	0.801
0.05	0.801
0.0533	0.798
0.0566	0.801
0.06	0.801
0.0633	0.798
0.0666	0.801
0.07	0.801
0.0733	0.801
0.0766	0.801
0.08	0.801
0.0833	0.801
0.0866	0.798
0.09	0.801
0.0933	0.801
0.0966	0.801
0.1	0.801
0.1033	0.801
0.1066	0.801
0.11	0.801
0.1133	0.801
0.1166	0.798
0.12	0.801
0.1233	0.801
0.1266	0.798
0.13	0.801
0.1333	0.798
0.1366	0.801
0.14	0.801
0.1433	0.801
0.1466	0.801
0.15	0.801
0.1533	0.798

0.1566	0.801
0.16	0.801
0.1633	0.801
0.1666	0.798
0.17	0.801
0.1733	0.801
0.1766	0.798
0.18	0.798
0.1833	0.798
0.1866	0.798
0.19	0.798
0.1933	0.798
0.1966	0.798
0.2	0.801
0.2033	0.798
0.2066	0.798
0.21	0.801
0.2133	0.801
0.2166	0.798
0.22	0.798
0.2233	0.801
0.2266	0.798
0.23	0.801
0.2333	0.798
0.2366	0.798
0.24	0.801
0.2433	0.801
0.2466	0.798
0.25	0.801
0.2533	0.801
0.2566	0.798
0.26	0.798
0.2633	0.801
0.2666	0.798
0.27	0.798
0.2733	0.801
0.2766	0.798
0.28	0.798
0.2833	0.798
0.2866	0.798
0.29	0.798
0.2933	0.801
0.2966	0.801
0.3	0.798
0.3033	0.798
0.3066	0.798
0.31	0.798
0.3133	0.798
0.3166	0.798
0.32	0.798

0.3233	0.801
0.3266	0.798
0.33	0.798
0.3333	0.801
0.35	0.798
0.3666	0.798
0.3833	0.798
0.4	0.798
0.4166	0.798
0.4333	0.798
0.45	0.798
0.4666	0.798
0.4833	0.798
0.5	0.798
0.5166	0.798
0.5333	0.798
0.55	0.798
0.5666	0.798
0.5833	0.798
0.6	0.798
0.6166	0.798
0.6333	0.798
0.65	0.798
0.6666	0.798
0.6833	0.798
0.7	0.798
0.7166	0.798
0.7333	0.798
0.75	0.798
0.7666	0.798
0.7833	0.798
0.8	0.798
0.8166	0.798
0.8333	0.798
0.85	0.798
0.8666	0.798
0.8833	0.798
0.9	0.798
0.9166	0.798
0.9333	0.798
0.95	0.798
0.9666	0.798
0.9833	0.795
1	0.798
1.2	0.795
1.4	0.795
1.6	0.792
1.8	0.788
2	0.782
2.2	0.776

2.4	0.776
2.6	0.773
2.8	0.769
3	0.766
3.2	0.76
3.4	0.757
3.6	0.75
3.8	0.747
4	0.741
4.2	0.738
4.4	0.731
4.6	0.725
4.8	0.722
5	0.715
5.2	0.709
5.4	0.703
5.6	0.7
5.8	0.693
6	0.687
6.2	0.684
6.4	0.681
6.6	0.674
6.8	0.671
7	0.665
7.2	0.658
7.4	0.655
7.6	0.649
7.8	0.646
8	0.639
8.2	0.633
8.4	0.63
8.6	0.627
8.8	0.624
9	0.617
9.2	0.614
9.4	0.605
9.6	0.605
9.8	0.601
10	0.595
12	0.554
14	0.516
16	0.484
18	0.453
20	0.421
22	0.396
24	0.377
26	0.354
28	0.335
30	0.316
32	0.3

34	0.281
36	0.272
38	0.256
40	0.243
42	0.234
44	0.224
46	0.212
48	0.202
50	0.193
52	0.183
54	0.177
56	0.164
58	0.158
60	0.152
62	0.145
64	0.139
66	0.129
68	0.126
70	0.123
72	0.11
74	0.11
76	0.104
78	0.101
80	0.098
82	0.091
84	0.088
86	0.082
88	0.079
90	0.079
92	0.076
94	0.072
96	0.069
98	0.069
100	0.066
120	0.031
140	0.012
160	-0.009
180	-0.025
200	-0.034
220	-0.047
240	-0.066
260	-0.085
280	-0.091
300	-0.104
320	-0.123
340	-0.133
360	-0.139
380	-0.145
400	-0.152
420	-0.158

440	-0.158
460	-0.158
480	-0.161
500	-0.164
520	-0.164
540	-0.167
560	-0.164
580	-0.164
600	-0.164
620	-0.164
640	-0.164
660	-0.161
680	-0.158
700	-0.155
720	-0.152
740	-0.149
760	-0.145
780	-0.142
800	-0.142
820	-0.139
840	-0.139
860	-0.139
880	-0.142
900	-0.142
920	-0.142
940	-0.139
960	-0.139
980	-0.142
1000	-0.142
1060	-0.149
1120	-0.155
1180	-0.158
1240	-0.158
1300	-0.155
1360	-0.139
1420	-0.123
1480	-0.114
1540	-0.107
1600	-0.12
1660	-0.142
1720	-0.171
1780	-0.196
1840	-0.212
1900	-0.224
1960	-0.244
2020	-0.25
2080	-0.247
2140	-0.24
2200	-0.234
2260	-0.234

2320	-0.234
2380	-0.24
2440	-0.247
2500	-0.263
2560	-0.269
2620	-0.278
2680	-0.275
2740	-0.272
2800	-0.256
2860	-0.244
2920	-0.234
2980	-0.24
3040	-0.256
3100	-0.272
3160	-0.301
3220	-0.316
3280	-0.326
3340	-0.332
3400	-0.332
3460	-0.332
3520	-0.326
3580	-0.316
3640	-0.307
3700	-0.31
3760	-0.304
3820	-0.301
3880	-0.304
3940	-0.313
4000	-0.316
4060	-0.316
4120	-0.313
4180	-0.31
4240	-0.304
4300	-0.297
4360	-0.297
4420	-0.294
4480	-0.313
4540	-0.326
4600	-0.354
4660	-0.37
4720	-0.383
4780	-0.386
4840	-0.386
4900	-0.389
4960	-0.38
5020	-0.373
5080	-0.367
5140	-0.367
5200	-0.37
5260	-0.377

5320	-0.38
5380	-0.389
5440	-0.386
5500	-0.38
5560	-0.367
5620	-0.358
5680	-0.342
5740	-0.326
5800	-0.323
5860	-0.316
5920	-0.332
5980	-0.342
6040	-0.37
6100	-0.396
6160	-0.392
6220	-0.399
6280	-0.402
6340	-0.392
6400	-0.38
6460	-0.377
6520	-0.37
6580	-0.37
6640	-0.373
6700	-0.38
6760	-0.38
6820	-0.386
6880	-0.386
6940	-0.38
7000	-0.37
7060	-0.358
7120	-0.348
7180	-0.335
7240	-0.332
7300	-0.339
7360	-0.354
7420	-0.367
7480	-0.389
7540	-0.415
7600	-0.421
7660	-0.424
7720	-0.424
7780	-0.418
7840	-0.415
7900	-0.399
7960	-0.392
8020	-0.392
8080	-0.399
8140	-0.415
8200	-0.408
8260	-0.405

8320	-0.402
8380	-0.396
8440	-0.38
8500	-0.37
8560	-0.358
8620	-0.342
8680	-0.332
8740	-0.326
8800	-0.335
8860	-0.345
8920	-0.364
8980	-0.373
9040	-0.364
9100	-0.361
9160	-0.348
9220	-0.342
9280	-0.332
9340	-0.31
9400	-0.294
9460	-0.288
9520	-0.291
9580	-0.291
9640	-0.288
9700	-0.291
9760	-0.288
9820	-0.278
9880	-0.263
9940	-0.25
10000	-0.24
10060	-0.228
10120	-0.224
10180	-0.228
10240	-0.237
10300	-0.253
10360	-0.278
10420	0.453
10480	13.583
10540	13.583
10600	13.583
10660	13.583
10720	13.583
10780	13.583
10840	13.583
10900	13.583
10960	13.583
11020	13.583
11080	13.583
11140	13.583
11200	13.583
11260	13.583

11320	13.583
11380	13.583
11440	13.583
11500	13.583
11560	13.583
11620	13.583
11680	13.583
11740	13.583
11800	13.583
11860	13.583
11920	13.583
11980	13.583
12040	13.583
12100	13.583
12160	13.583
12220	13.583
12280	13.583
12340	13.583
12400	13.583
12460	13.583
12520	13.583
12580	13.583
12640	13.583
12700	13.583
12760	13.583
12820	13.583
12880	13.583
12940	13.583
13000	13.583
13060	13.583
13120	13.583
13180	13.583
13240	13.583

SECOND RECOVERY PE

ELAPSED MW-1

TIME DEPTH

62	60.29
153	60.19
269	60.11
358	60.05
537	60.04
636	60.05
744	60.08
1352	60.1
2271	60.01
3211	59.93
3515	59.91
4840	5990

SECOND RECOVER

ELAPSED MW-10

TIME DEPTH

46	60.35
135	60.24
264	60.15
367	60.09
546	60.08
631	60.1
739	60.12
1348	60.13
2288	60.06
3209	59.96
3510	59.95
4837	59.9

SECOND RECOVER

ELAPSED MW-12

TIME DEPTH

84	61.51
169	61.41
291	61.34
373	61.28
550	61.27
652	61.29
760	61.29
1369	61.3
2269	61.24
3228	61.13
3544	61.13
4856	61.95

SECOND RECOVER

ELAPSED MW-13

TIME DEPTH

79	30.61
161	30.59
285	30.57
377	30.58
554	30.6
648	30.59
757	30.61
1365	30.64
2271	30.6
3223	30.56
3536	30.57
4853	30.57

SECOND RECOVER

ELAPSED MW-16

TIME DEPTH

75 54.55

157 54.52

280 54.45

381 54.41

559 54.41

645 54.4

753 54.42

1362 54.43

2273 54.35

3220 54.24

3529 54.25

4848 54.23

SECOND RECOVER

ELAPSED MW-3

TIME DEPTH

68	52.37
150	52.37
275	52.33
360	52.28
540	52.29
639	52.3
746	52.34
1357	52.39
2283	52.31
3214	52.25
3519	52.23
4842	52.2

SECOND RECOVER

ELAPSED MW-4

TIME DEPTH

66	55.95
148	55.89
274	55.81
361	55.75
541	55.73
641	55.75
728	55.77
1356	55.78
2285	55.74
3216	55.62
3522	55.63
4845	55.62

SECOND RECOVERY PERIOD

ELAPSED MW-43

TIME DEPTH

41	45.97
523	45.96
655	45.96
763	45.98
1327	45.96
2258	46
3231	45.98
3549	45.97
4829	45.99

SECOND RECOVER

ELAPSED MW-61

TIME DEPTH

53	50.7
141	50.69
254	50.63
349	50.58
533	50.58
624	50.59
735	50.59
1337	50.74
2266	50.76
3205	50.49
3560	50.51
4832	50.02

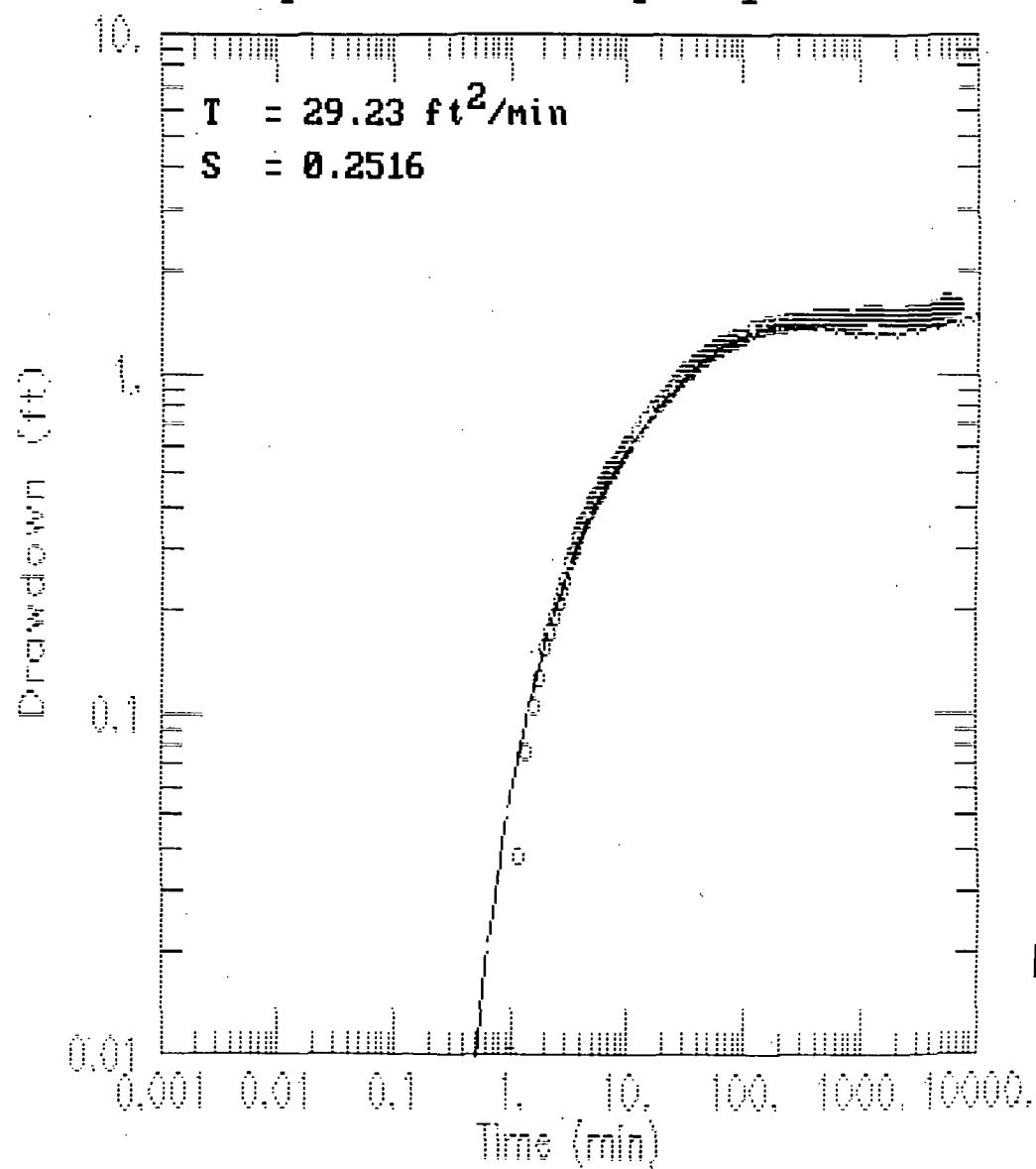
SECOND RECOVERY PERIOD

ELAPSED CREEK

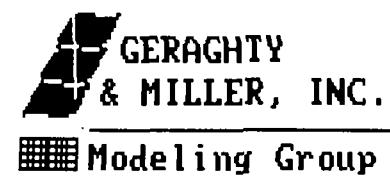
TIME DEPTH TO SURFACE

58	22.96
260	22.97
345	22.97
528	22.95
629	22.99
1332	23
2262	23.02
3200	22.95
3553	22.72

# apt1 east well pump test



AQTESOLV

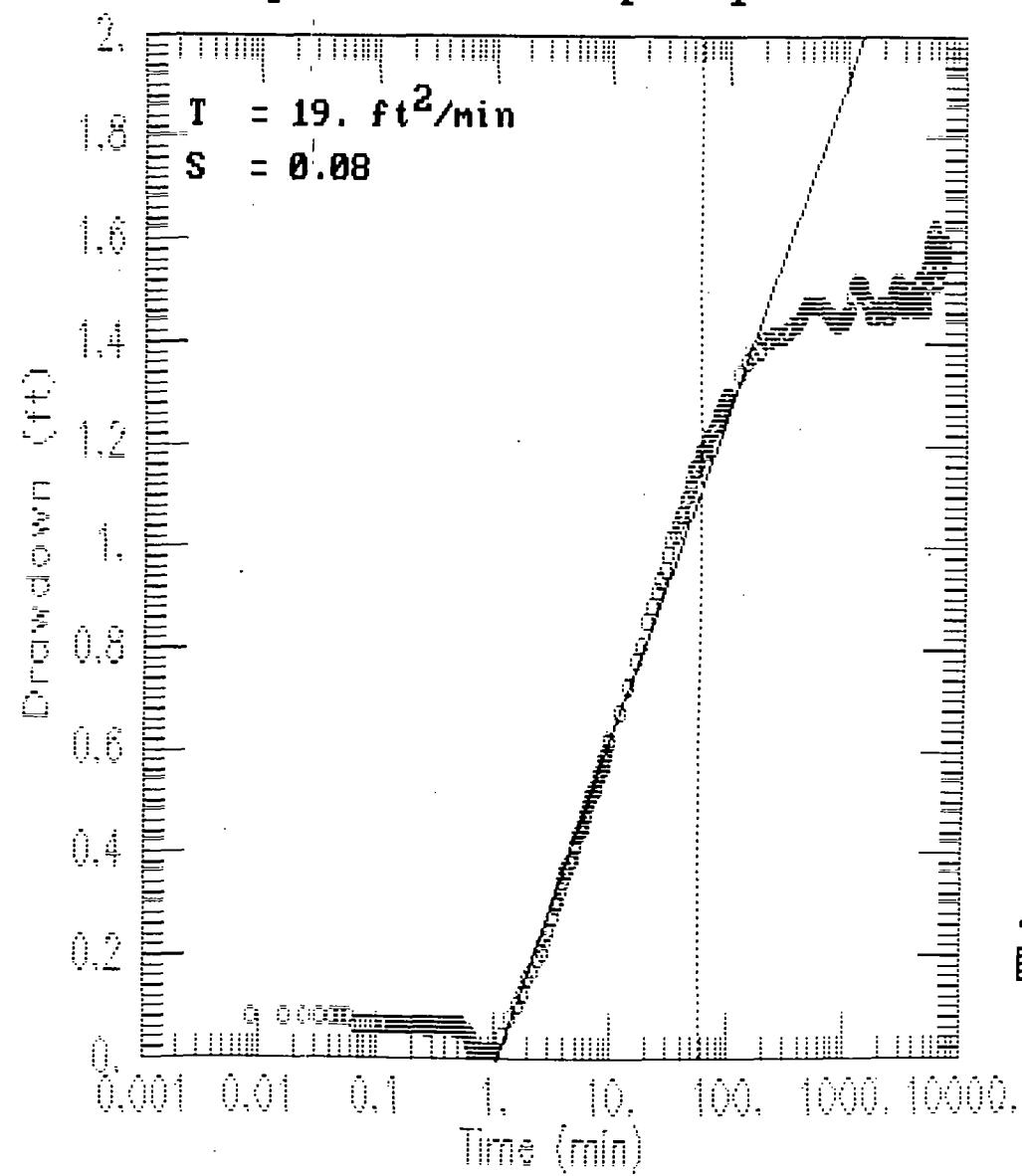


GERAGHTY  
& MILLER, INC.

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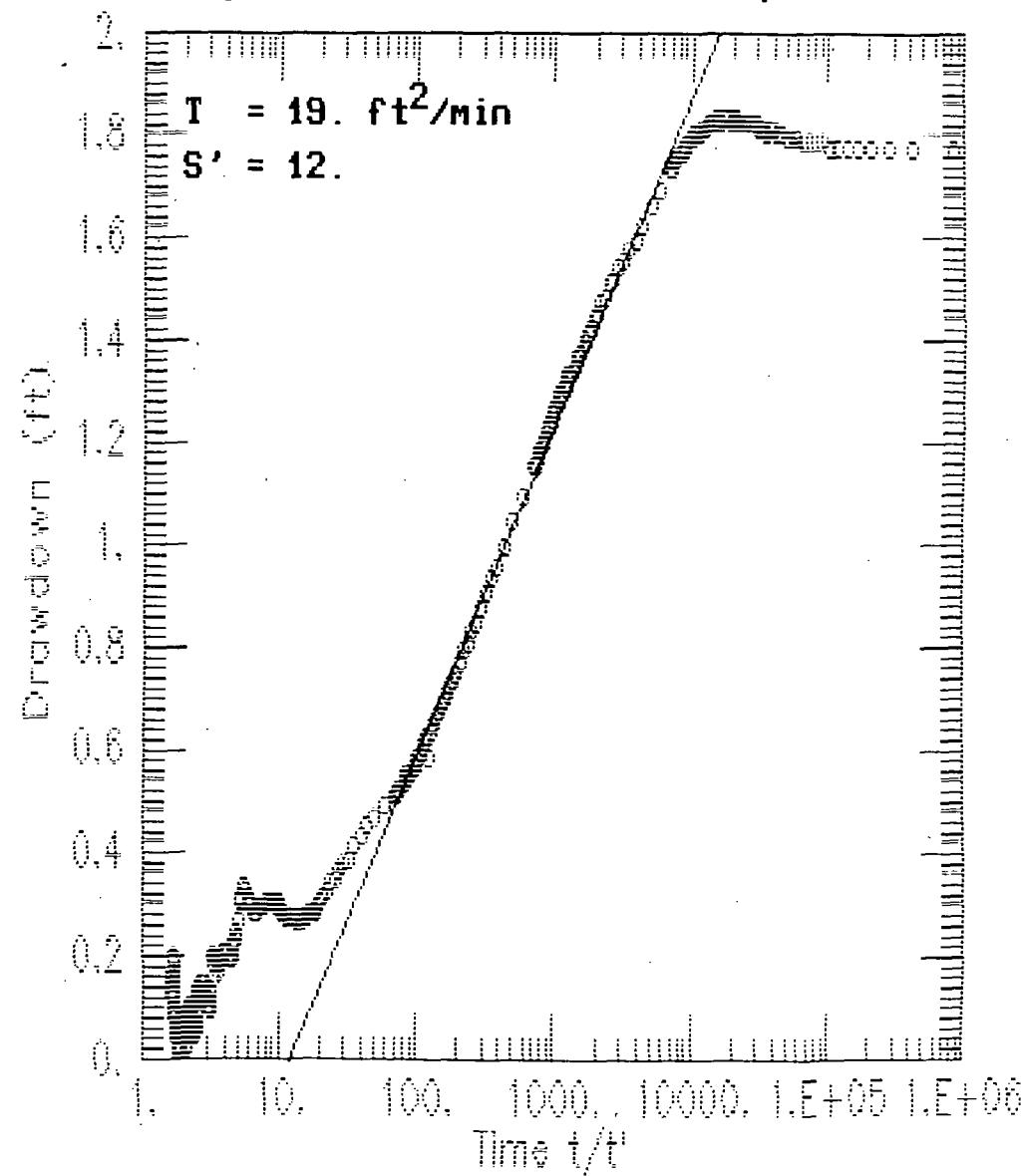
Modeling Group

# apt1 east well pump test

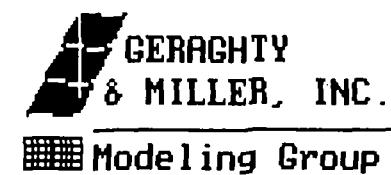


AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

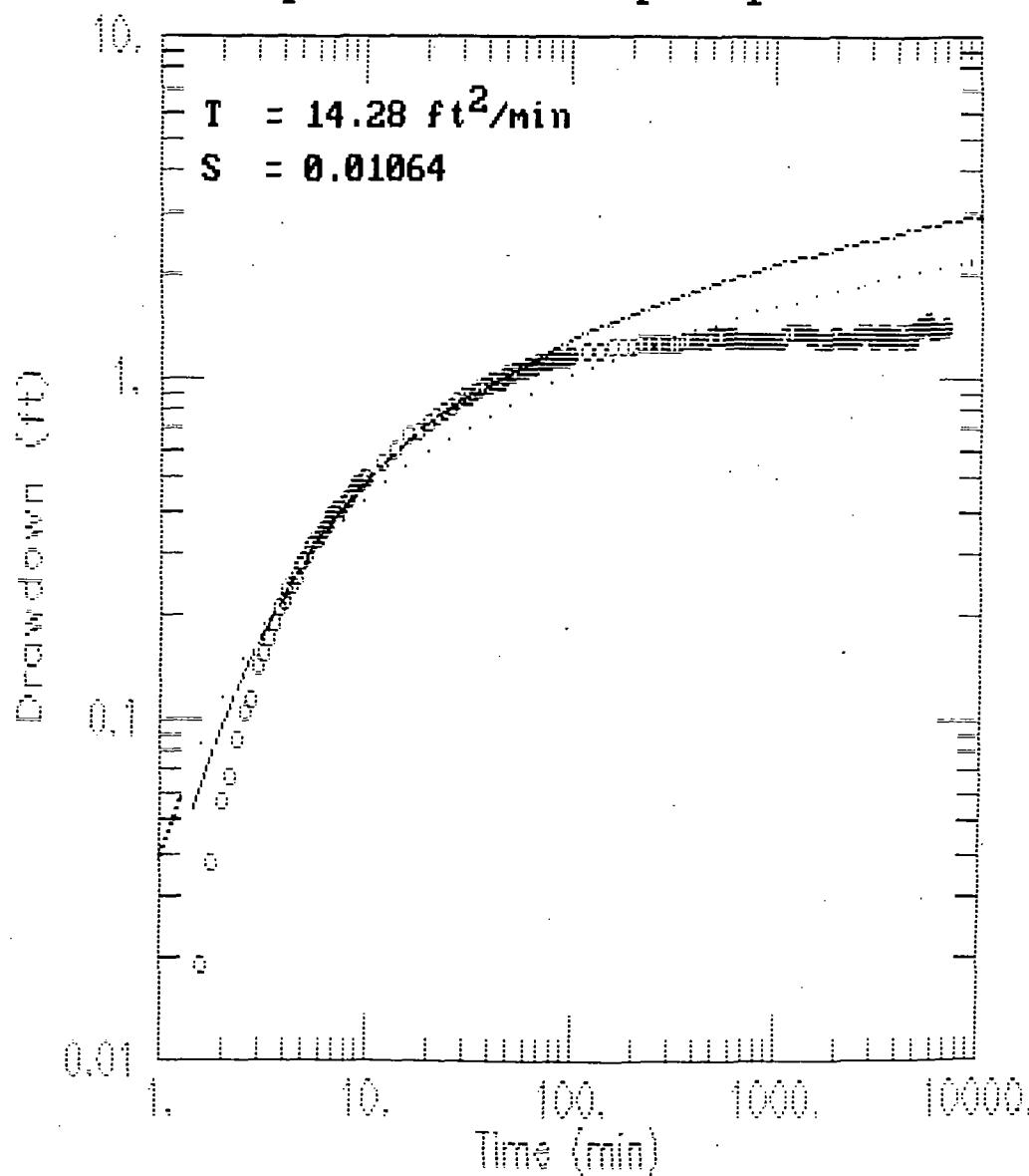
# apt1 east well recovery data



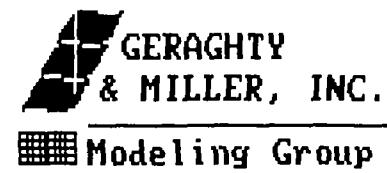
AQTESOLV



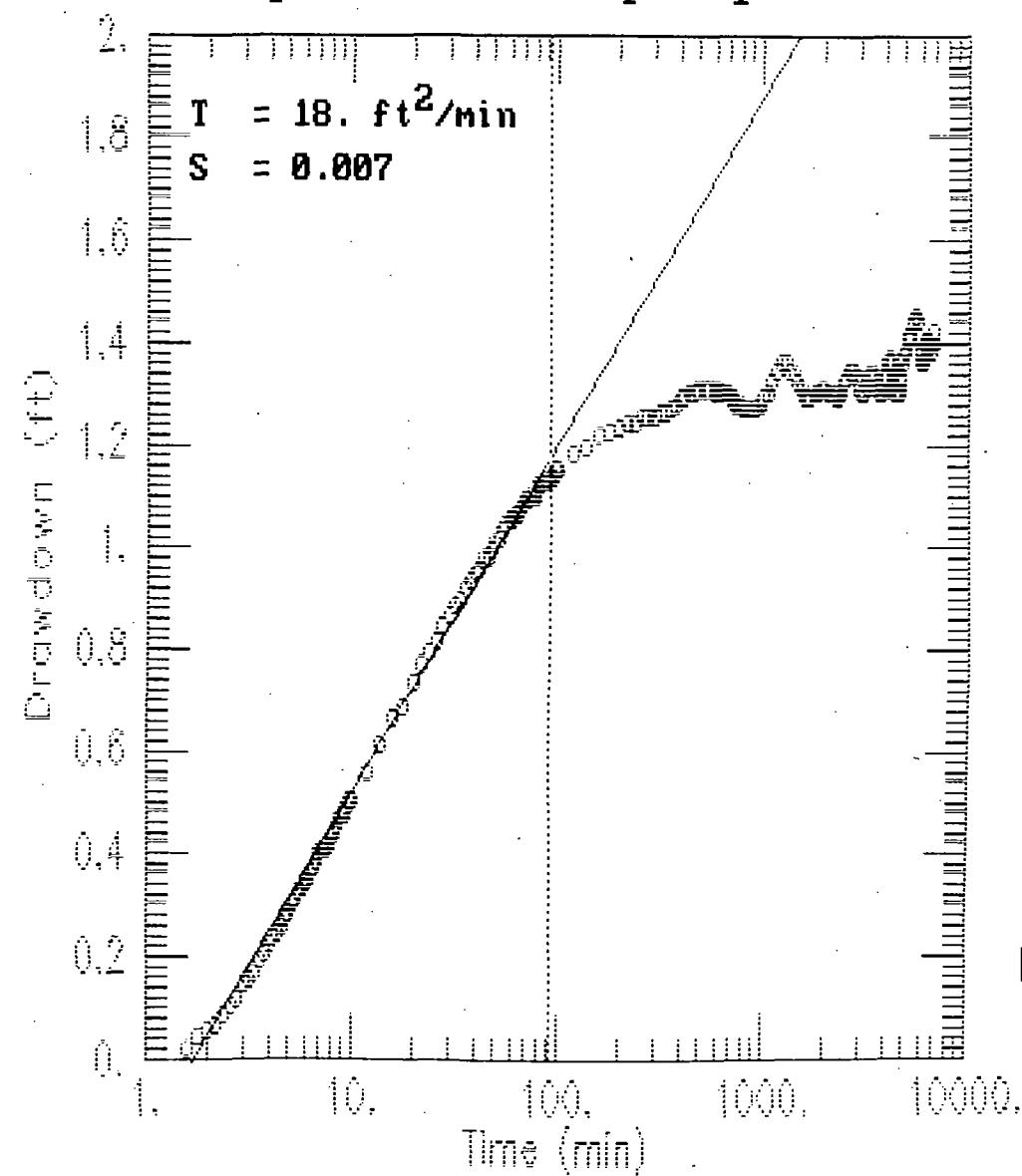
# apt2 east well pump test



AQTESOLV

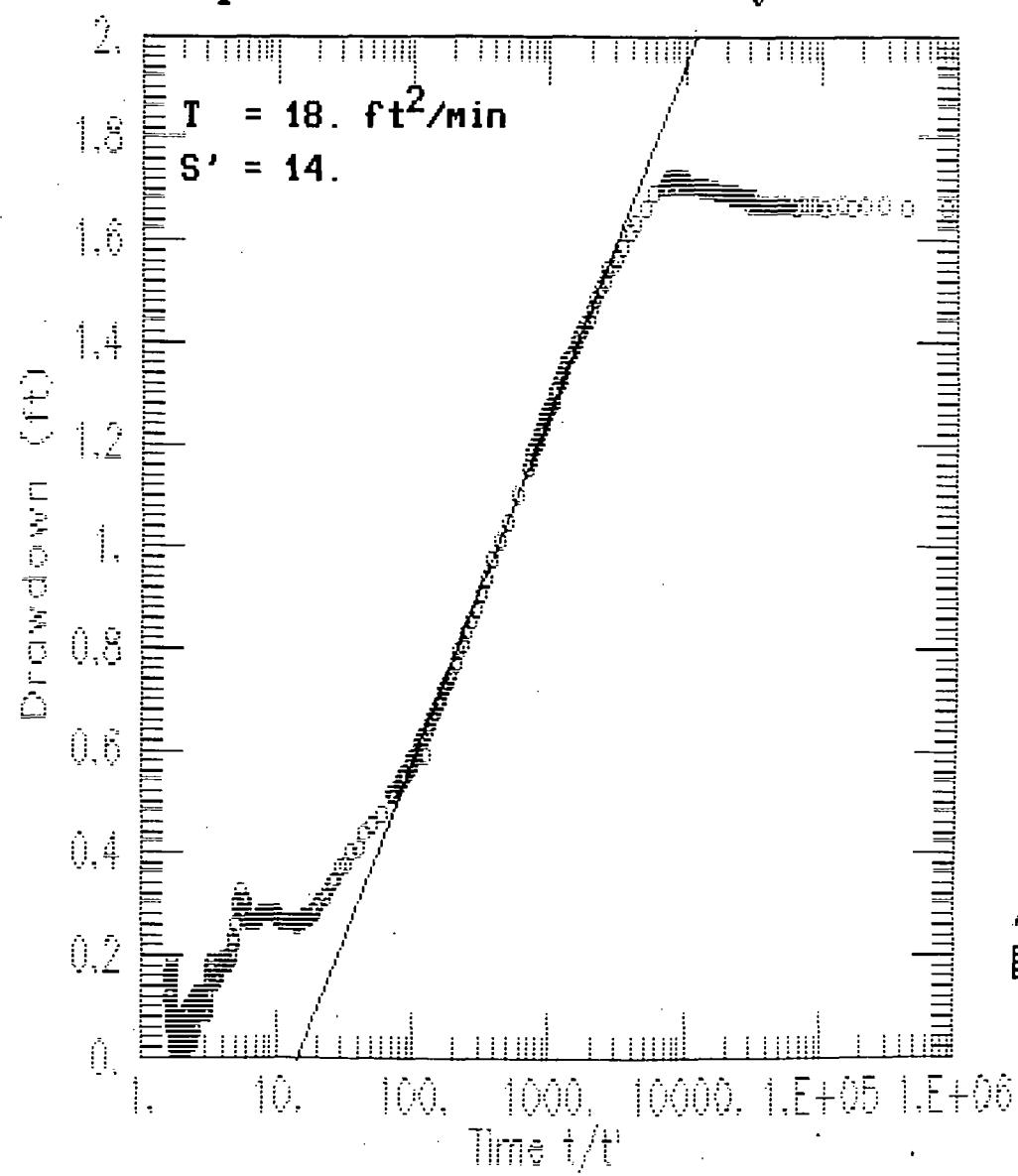


## apt2 east well pump test

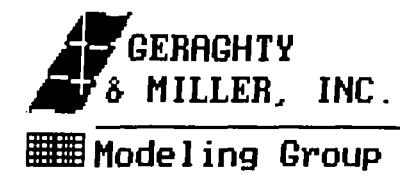


AQTESOLV  
GERAGHTY  
& MILLER, INC.  
Modeling Group

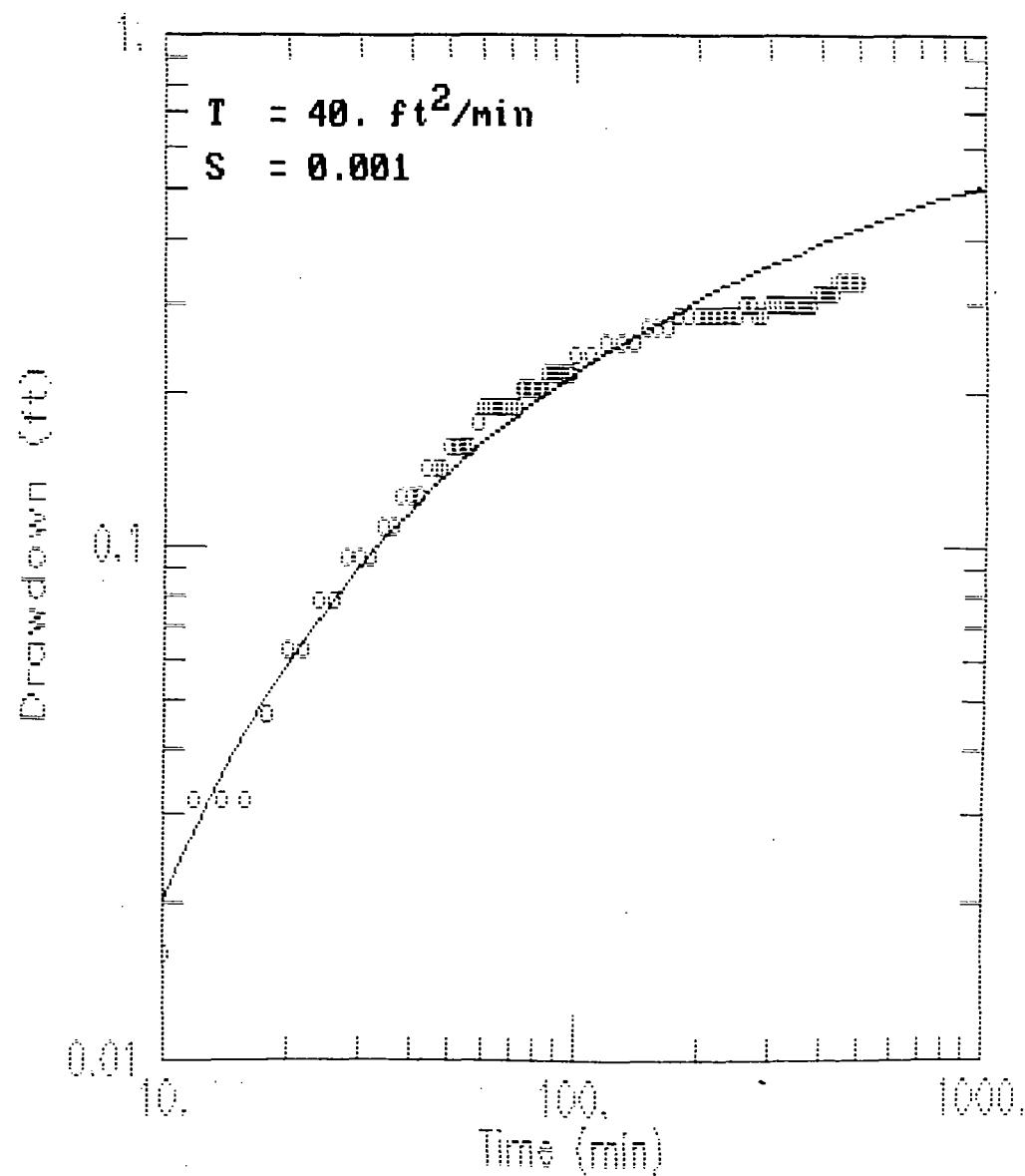
## apt2 east well recovery data



AQTESOLV

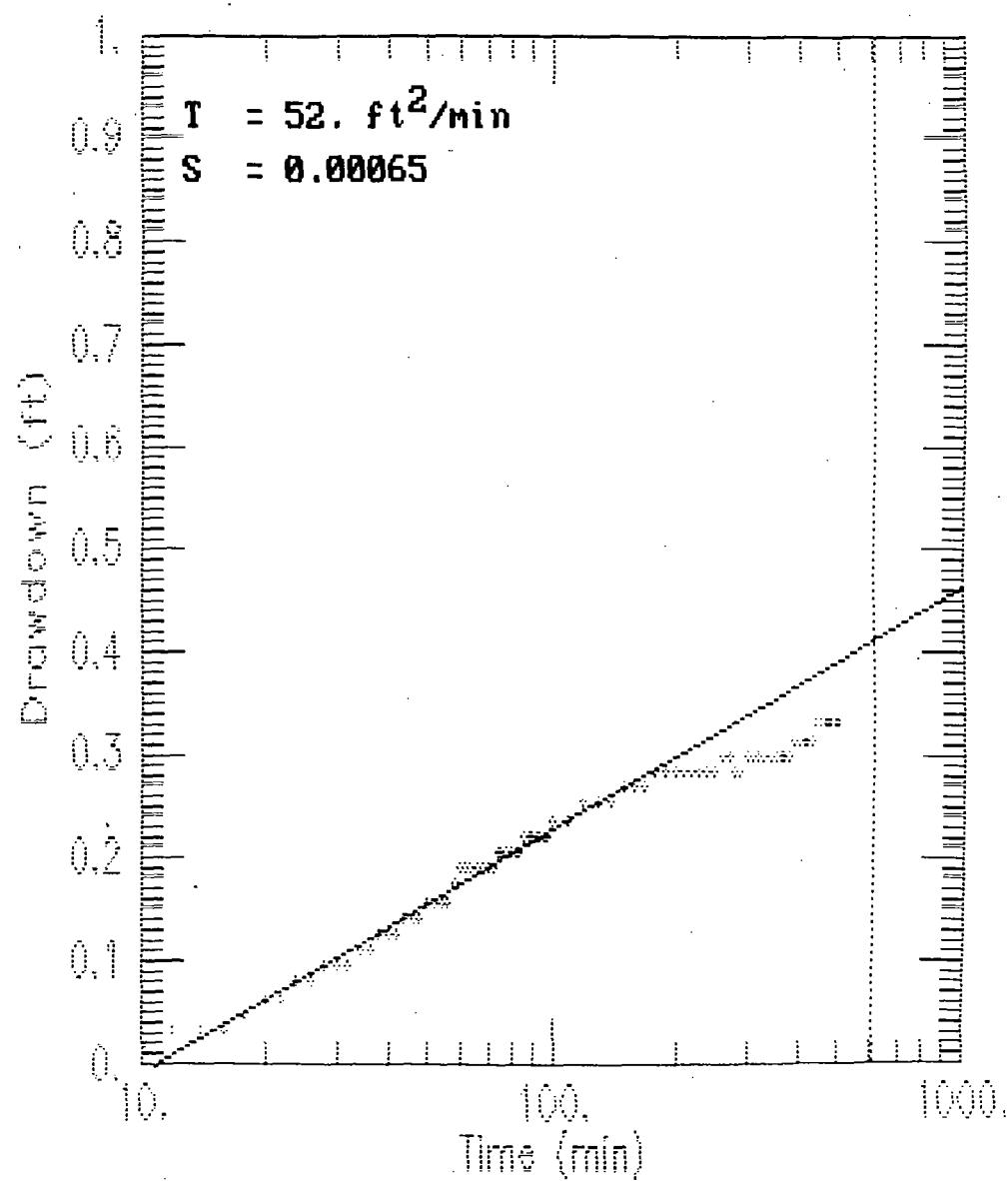


# mw6 from 9 minutes thru 500 minutes

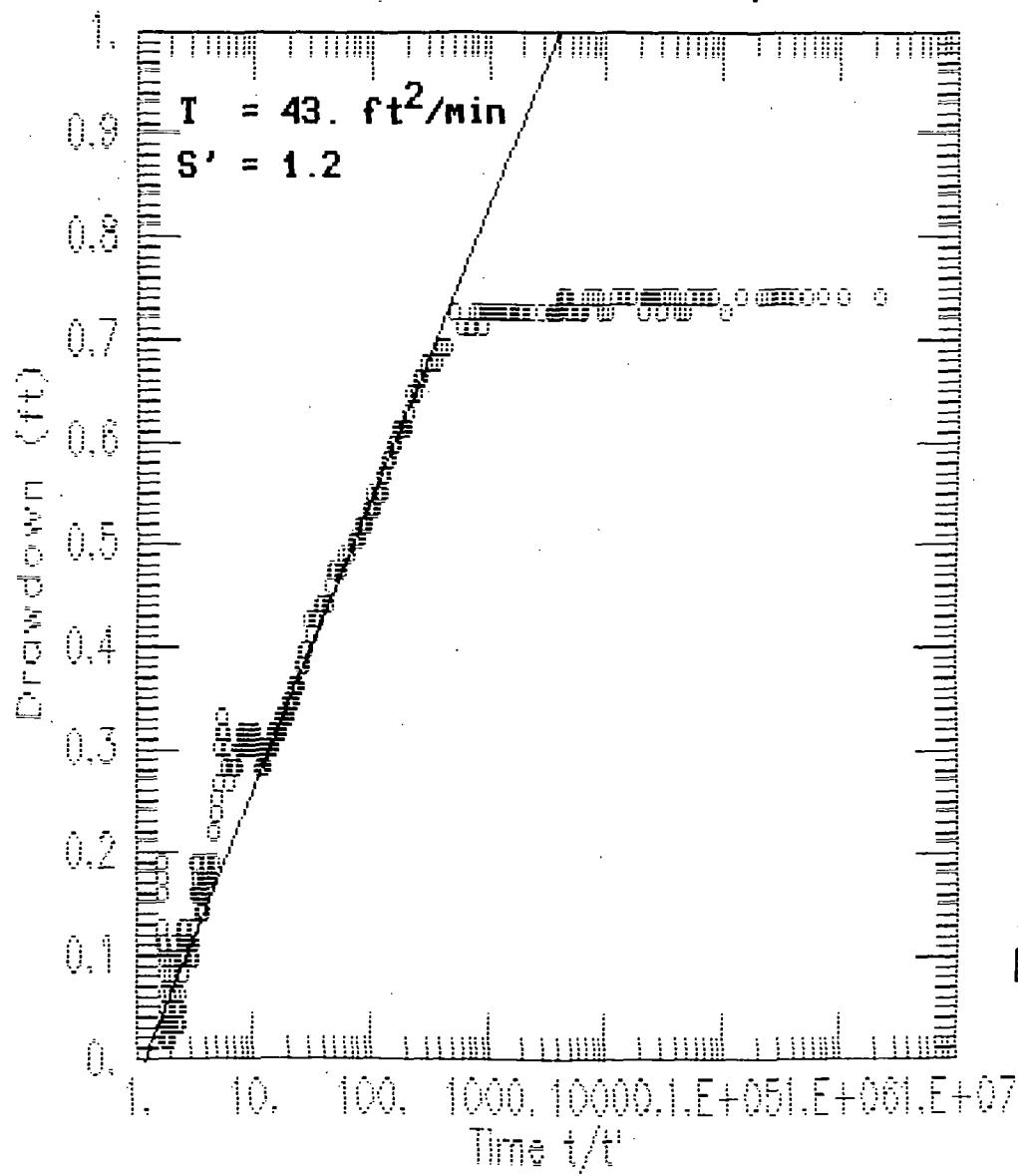


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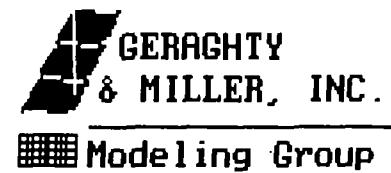
mw6 from 9 minutes thru 500 minutes



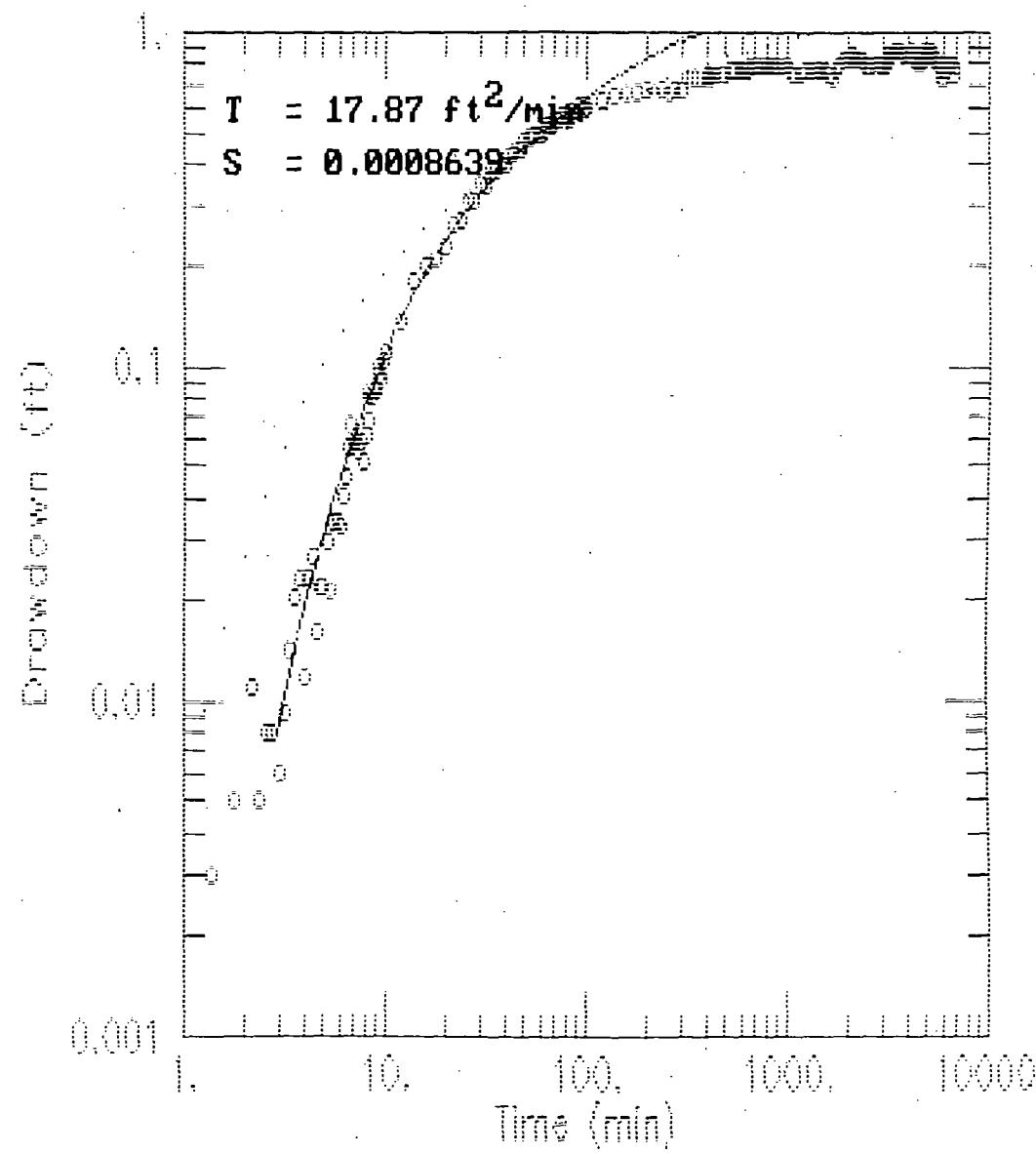
# mw6 east well recovery data



AQTESOLV

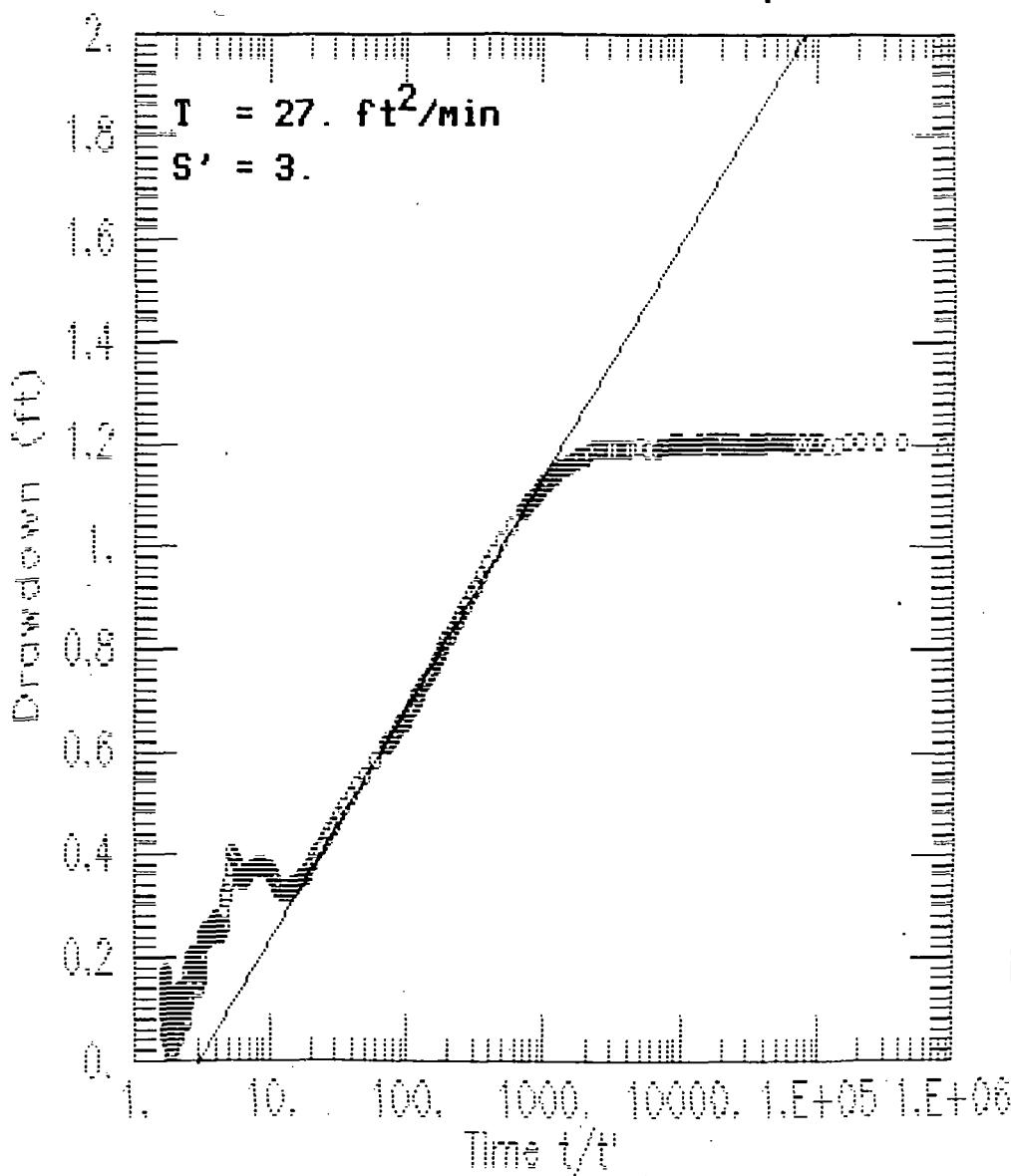


# mw14 with barro correction after 1 min



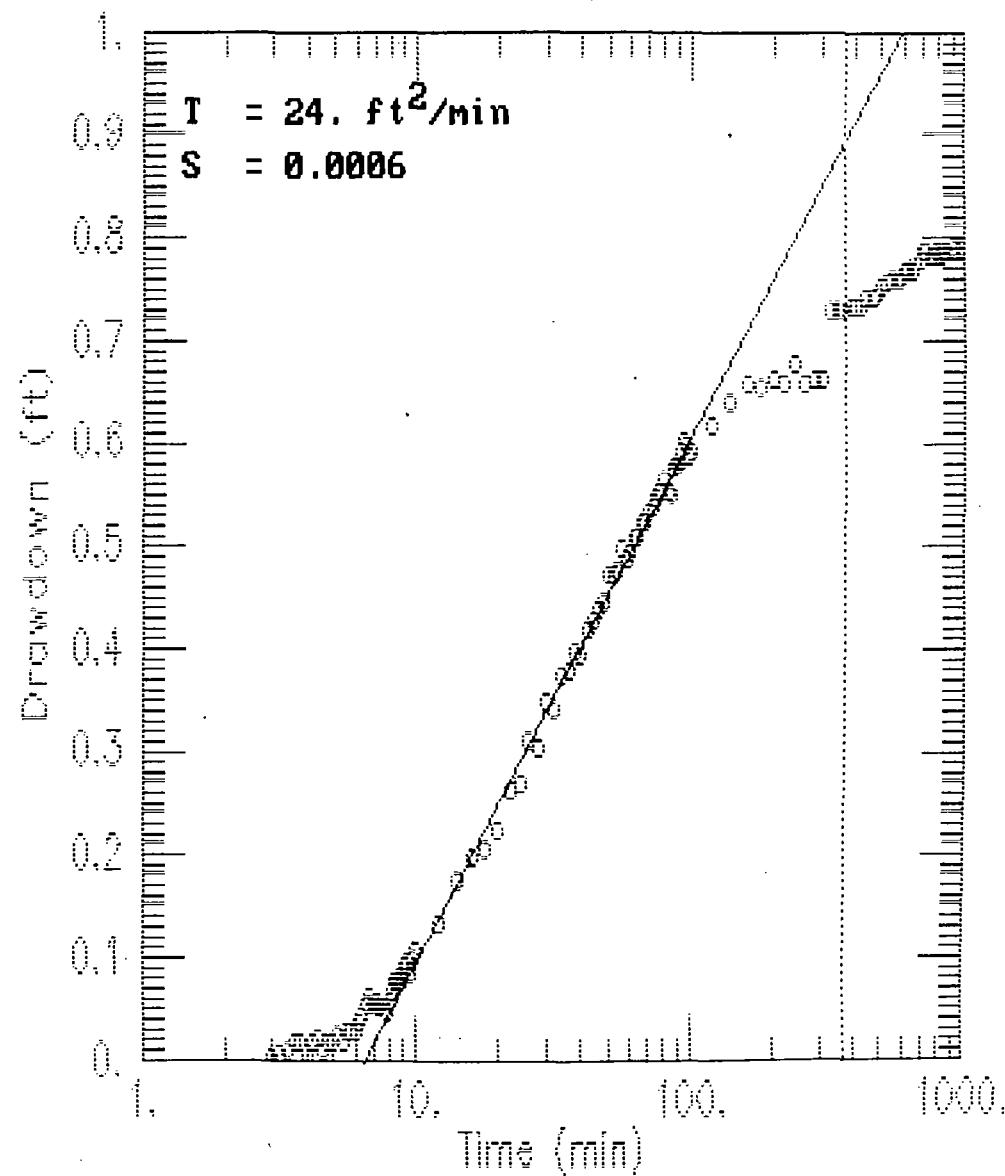
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# mw14 east well recovery data



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& MILLER, INC.  
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# mw14 with barometric corrections



AQTESOLV

